FIG. 1

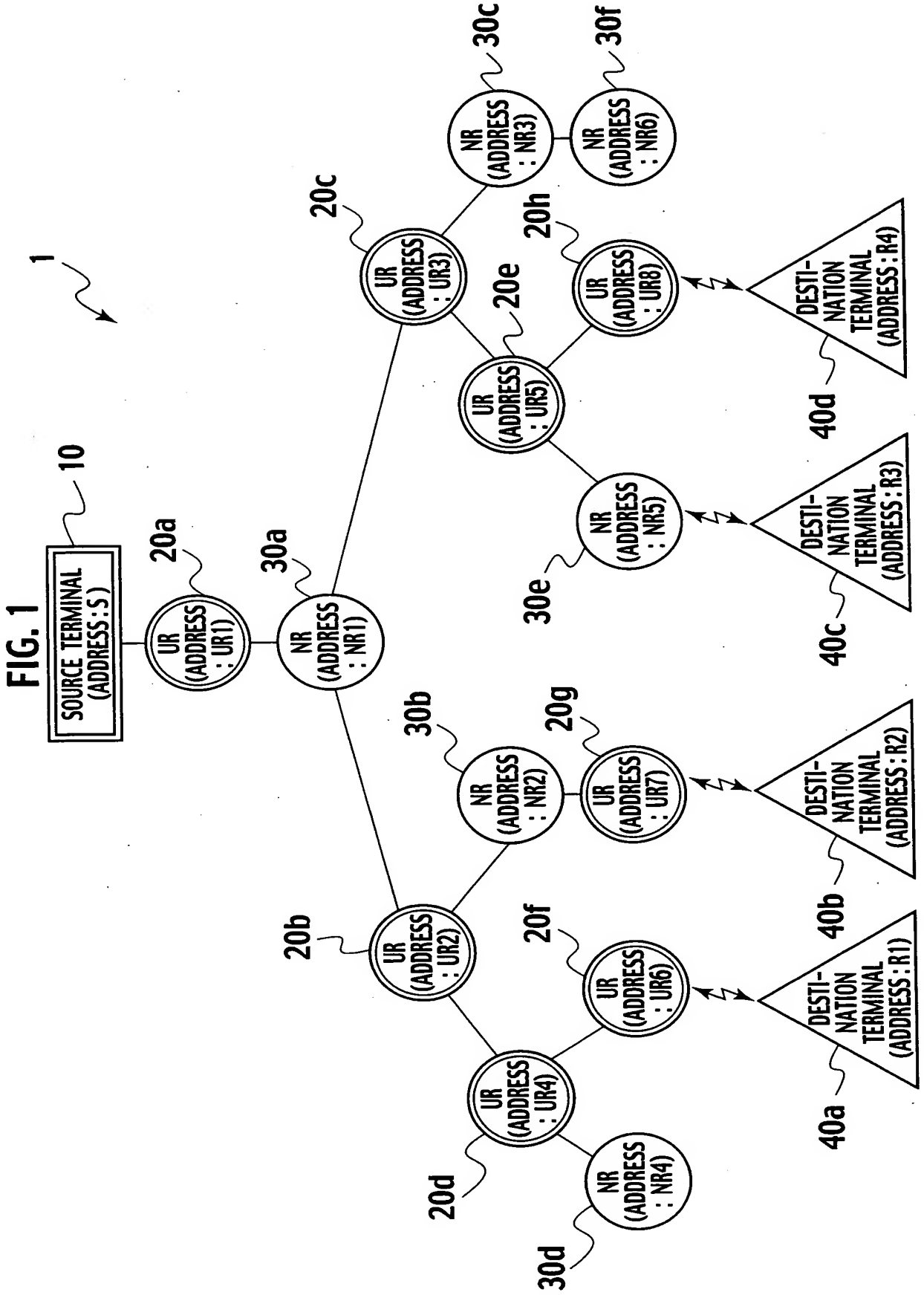

1
SOURCE TERMINAL (ADDRESS : S)
10
UR (ADDRESS : UR1)
20a
NR (ADDRESS : NR1)
30a
UR (ADDRESS : UR2)
20b
NR (ADDRESS : NR2)
30b
UR (ADDRESS : UR3)
20c
NR (ADDRESS : NR3)
30c
UR (ADDRESS : UR4)
20d
NR (ADDRESS : NR4)
30d
UR (ADDRESS : UR5)
20e
NR (ADDRESS : NR5)
30e
UR (ADDRESS : UR6)
20f
NR (ADDRESS : NR6)
30f
UR (ADDRESS : UR7)
20g
UR (ADDRESS : UR8)
20h
DESTINATION TERMINAL (ADDRESS : R1)
40a
DESTINATION TERMINAL (ADDRESS : R2)
40b
DESTINATION TERMINAL (ADDRESS : R3)
40c
DESTINATION TERMINAL (ADDRESS : R4)
40d

FIG. 2

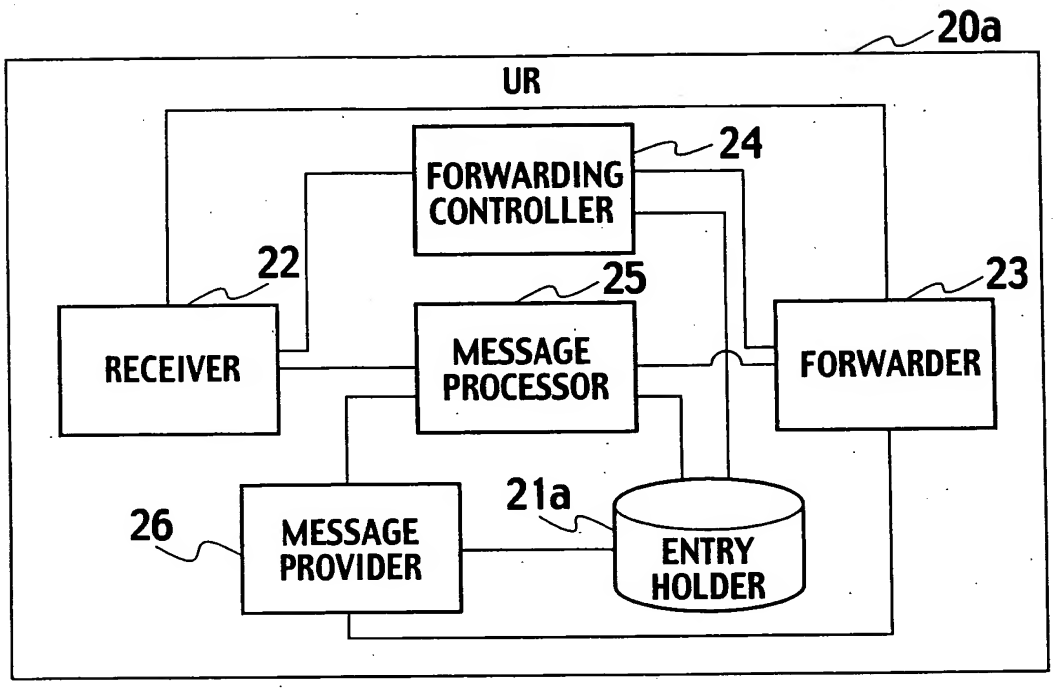


FIG. 3

21a

TABLE TYPE	SOURCE TERMINAL ADDRESS	MULTICAST GROUP ADDRESS	TUNNEL SOURCE ADDRESS	PREVIOUS TUNNEL SOURCE ADDRESS	FORWARDING ADDRESS	KAT	JT
MFT	S	G	S		UR3 UR2	KAT(UR3) KAT(UR2)	JT

FIG. 4

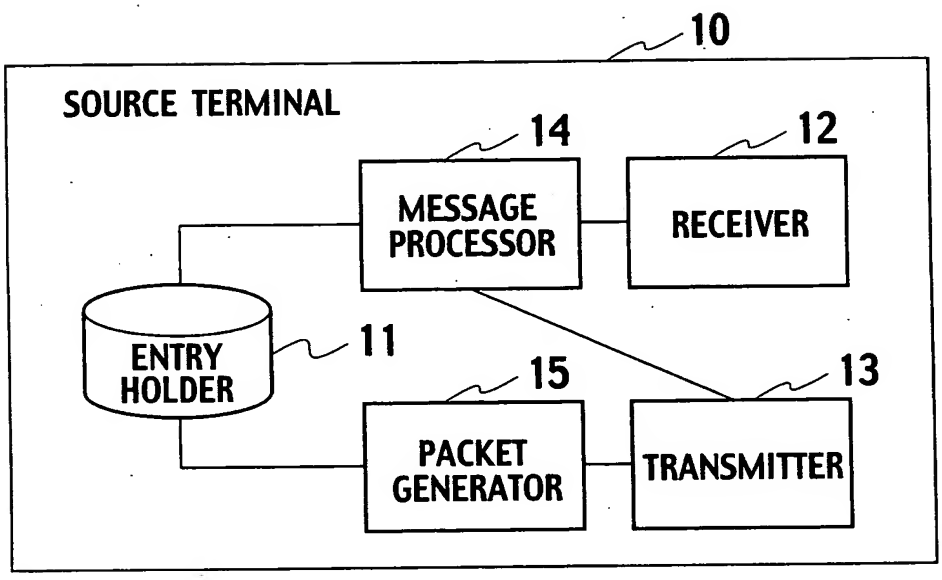
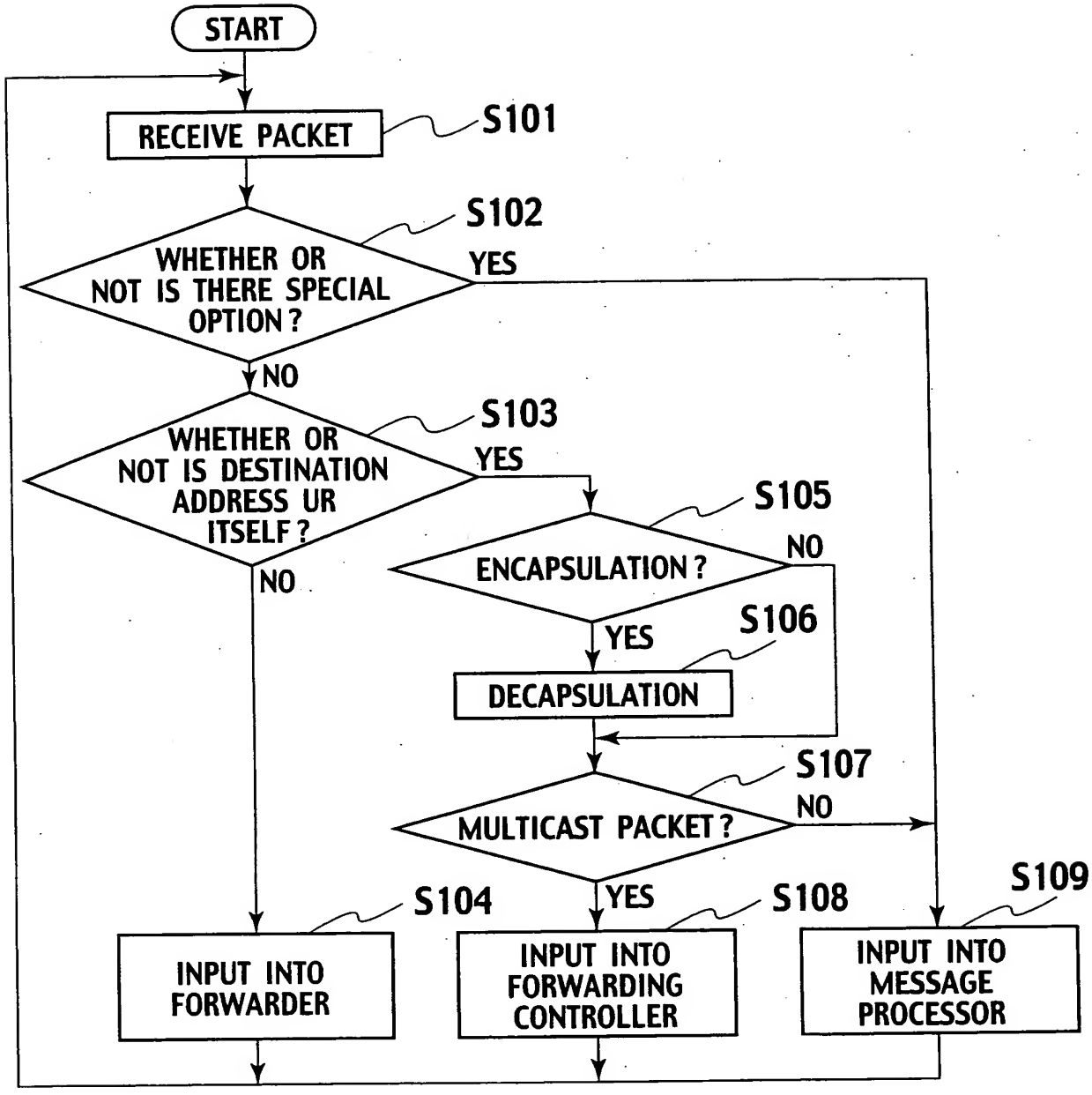


FIG. 5

11

TABLE TYPE	SOURCE TERMINAL ADDRESS	MULTICAST GROUP ADDRESS	SENDING ADDRESS	KAT
MFT	S	G	UR1	KAT (UR1)

FIG. 6


START
RECEIVE PACKET
S101
S102
WHETHER OR NOT IS THERE SPECIAL OPTION?
YES
NO
S103
WHETHER OR NOT IS DESTINATION ADDRESS UR ITSELF?
YES
NO
S105
ENCAPSULATION?
NO
YES
S106
DECAPSULATION
S107
MULTICAST PACKET?
NO
YES
S104
S108
S109
INPUT INTO FORWARDER
INPUT INTO FORWARDING CONTROLLER
INPUT INTO MESSAGE PROCESSOR

5/41

FIG. 7

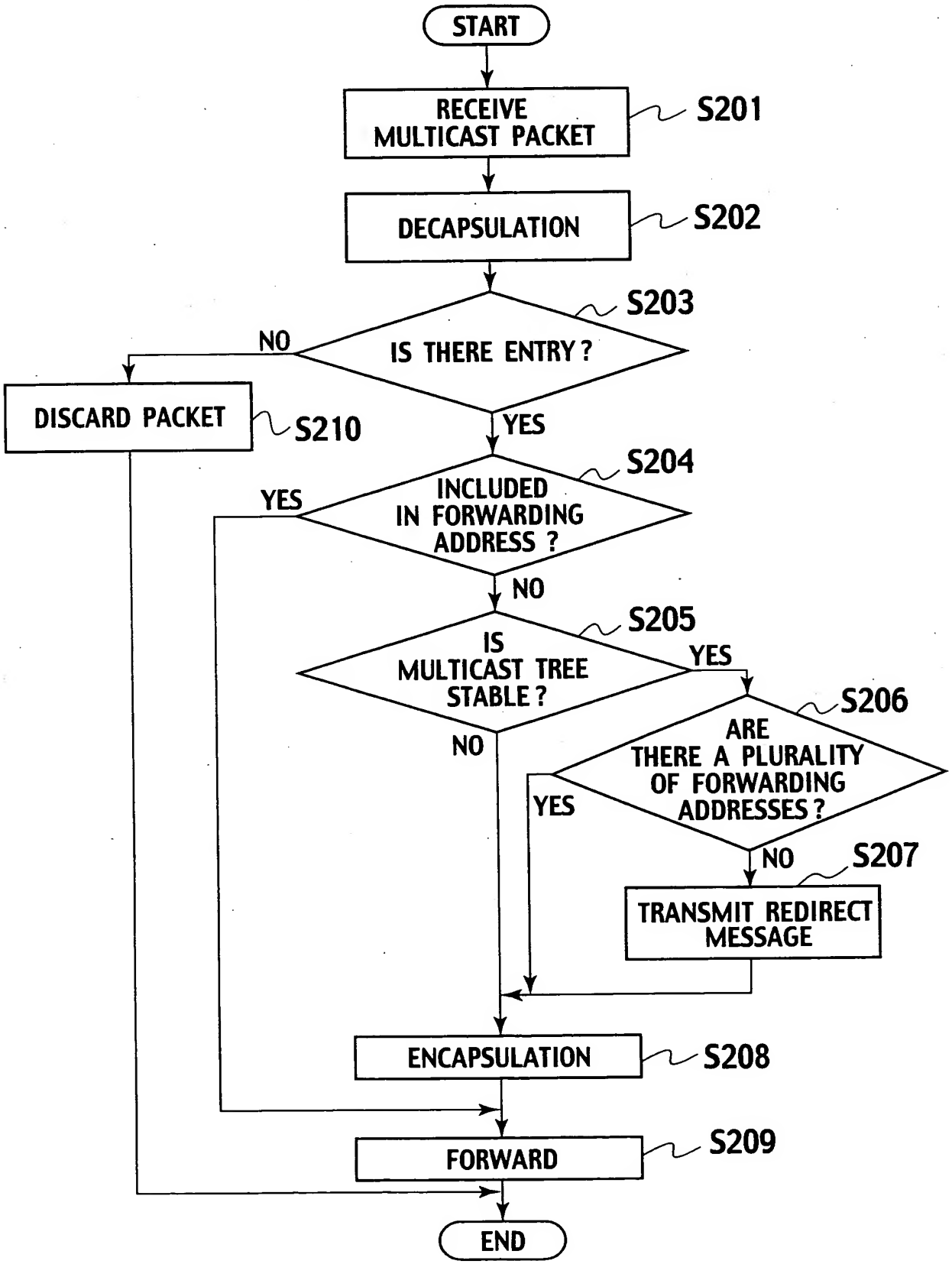

START
RECEIVE MULTICAST PACKET
S201
DECAPSULATION
S202
S203
IS THERE ENTRY ?
NO
YES
DISCARD PACKET
S210
S204
INCLUDED IN FORWARDING ADDRESS ?
YES
NO
S205
IS MULTICAST TREE STABLE ?
YES
NO
S206
ARE THERE A PLURALITY OF FORWARDING ADDRESSES ?
YES
NO
S207
TRANSMIT REDIRECT MESSAGE
ENCAPSULATION
S208
FORWARD
S209
END

FIG. 8

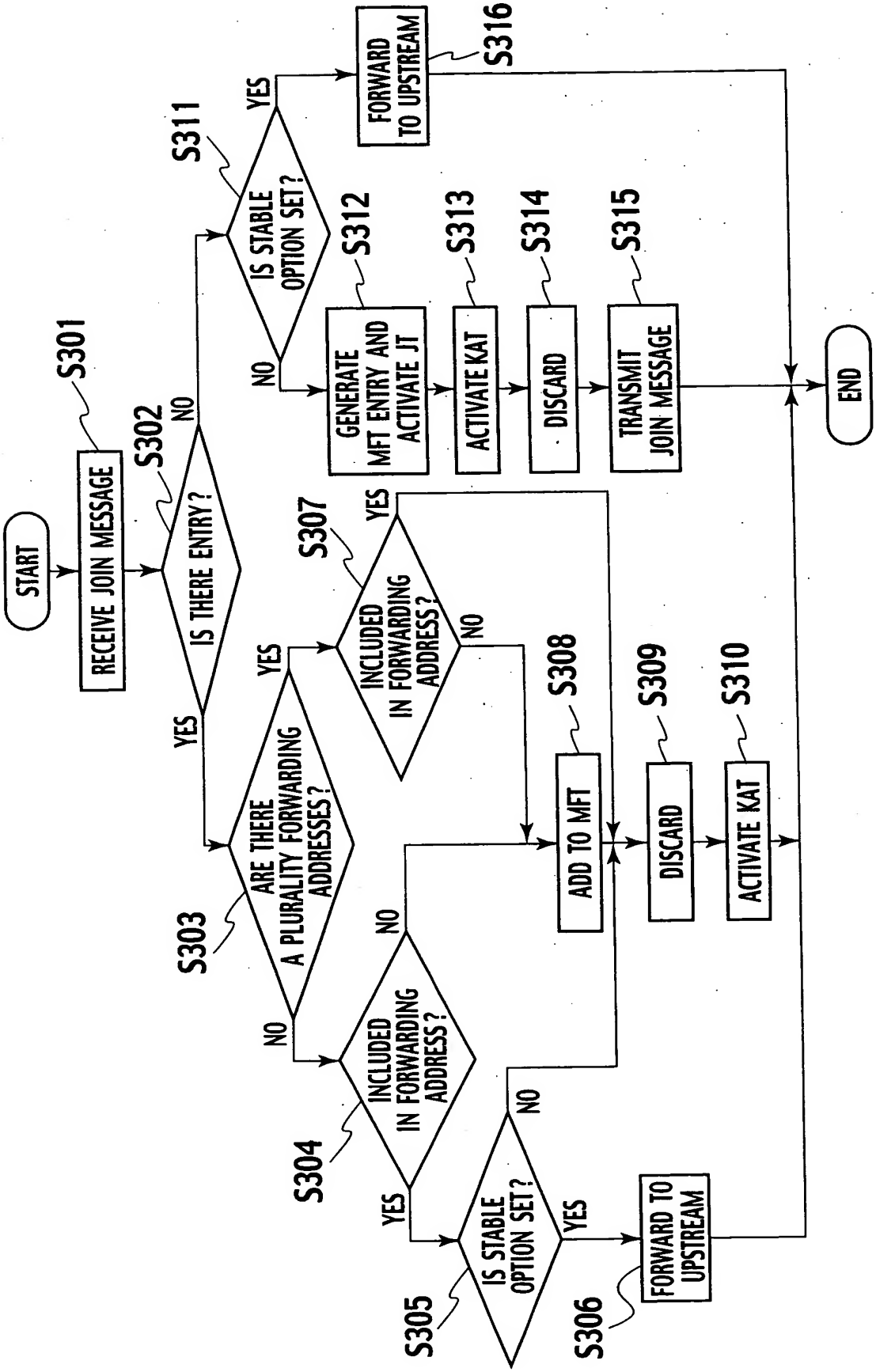

START
S301
RECEIVE JOIN MESSAGE
S302
IS THERE ENTRY?
YES
NO
S303
ARE THERE A PLURALITY FORWARDING ADDRESSES?
YES
NO
S304
INCLUDED IN FORWARDING ADDRESS?
YES
NO
S305
IS STABLE OPTION SET?
YES
NO
S306
FORWARD TO UPSTREAM
S307
INCLUDED IN FORWARDING ADDRESS?
YES
NO
S308
ADD TO MFT
S309
DISCARD
S310
ACTIVATE KAT
S311
IS STABLE OPTION SET?
YES
NO
S312
GENERATE MFT ENTRY AND ACTIVATE JT
S313
ACTIVATE KAT
S314
DISCARD
S315
TRANSMIT JOIN MESSAGE
S316
FORWARD TO UPSTREAM
END

FIG. 9

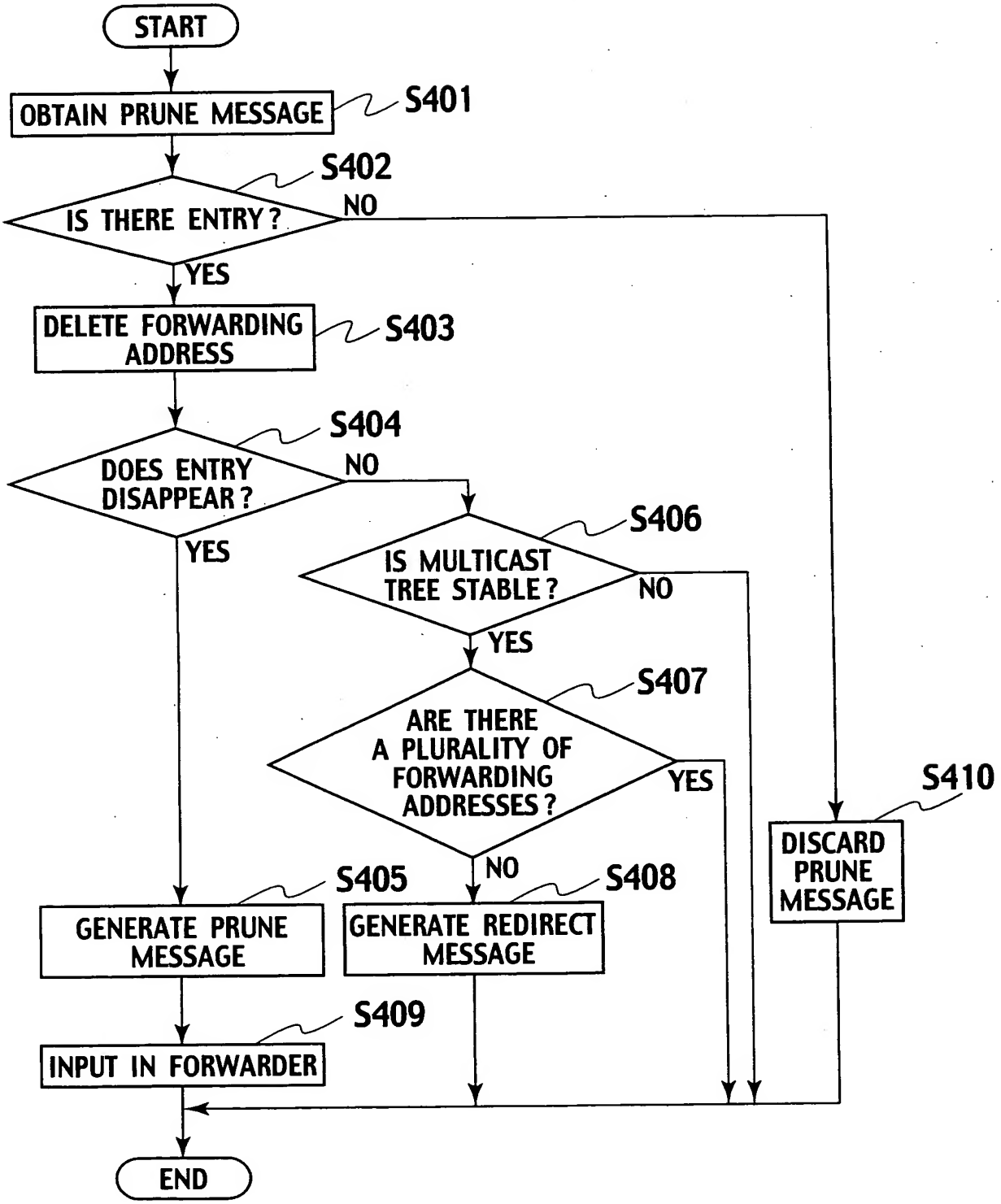

START
OBTAIN PRUNE MESSAGE
S401
S402
IS THERE ENTRY?
NO
YES
DELETE FORWARDING ADDRESS
S403
S404
DOES ENTRY DISAPPEAR?
NO
YES
S406
IS MULTICAST TREE STABLE?
NO
YES
S407
ARE THERE A PLURALITY OF FORWARDING ADDRESSES?
YES
NO
S410
DISCARD PRUNE MESSAGE
S405
GENERATE PRUNE MESSAGE
S408
GENERATE REDIRECT MESSAGE
S409
INPUT IN FORWARDER
END

FIG. 10

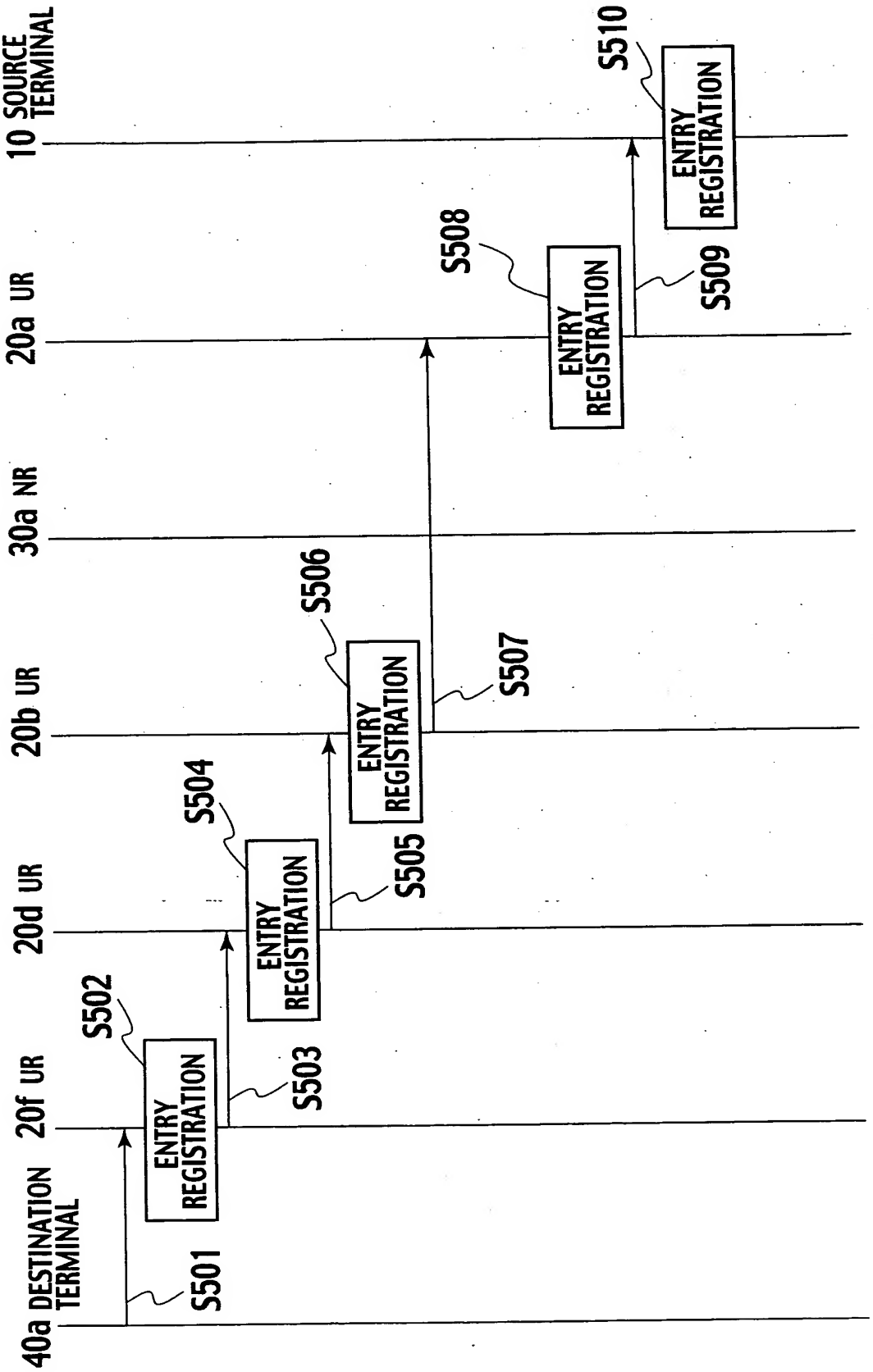

40a DESTINATION TERMINAL
20f UR
20d UR
20b UR
30a NR
20a UR
10 SOURCE TERMINAL
ENTRY REGISTRATION
S501
S502
S503
S504
S505
S506
S507
S508
S509
S510

FIG. 11

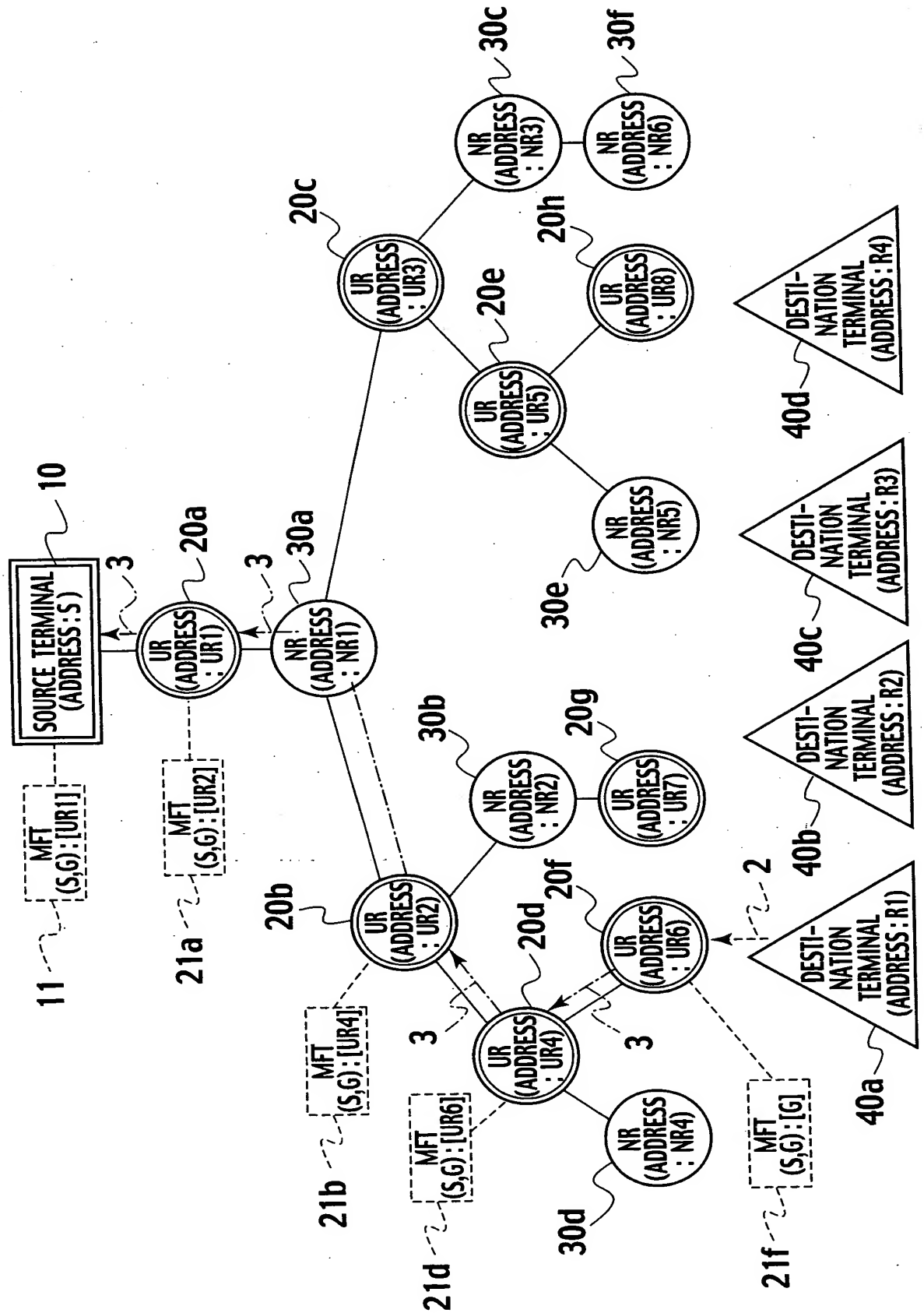

SOURCE TERMINAL (ADDRESS: S)
10
3
UR (ADDRESS: UR1)
20a
3
NR (ADDRESS: NR1)
30a
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
NR (ADDRESS: NR6)
30f
UR (ADDRESS: UR8)
20h
UR (ADDRESS: UR5)
20e
NR (ADDRESS: NR5)
30e
DESTINATION TERMINAL (ADDRESS: R4)
40d
DESTINATION TERMINAL (ADDRESS: R3)
40c
DESTINATION TERMINAL (ADDRESS: R2)
40b
DESTINATION TERMINAL (ADDRESS: R1)
40a
NR (ADDRESS: NR2)
30b
UR (ADDRESS: UR7)
20g
UR (ADDRESS: UR2)
20b
UR (ADDRESS: UR6)
20f
2
UR (ADDRESS: UR4)
20d
3
3
NR (ADDRESS: NR4)
30d
MFT (S,G): [UR1]
11
MFT (S,G): [UR2]
21a
MFT (S,G): [UR4]
21b
MFT (S,G): [UR6]
21d
MFT (S,G): [G]
21f

FIG. 12

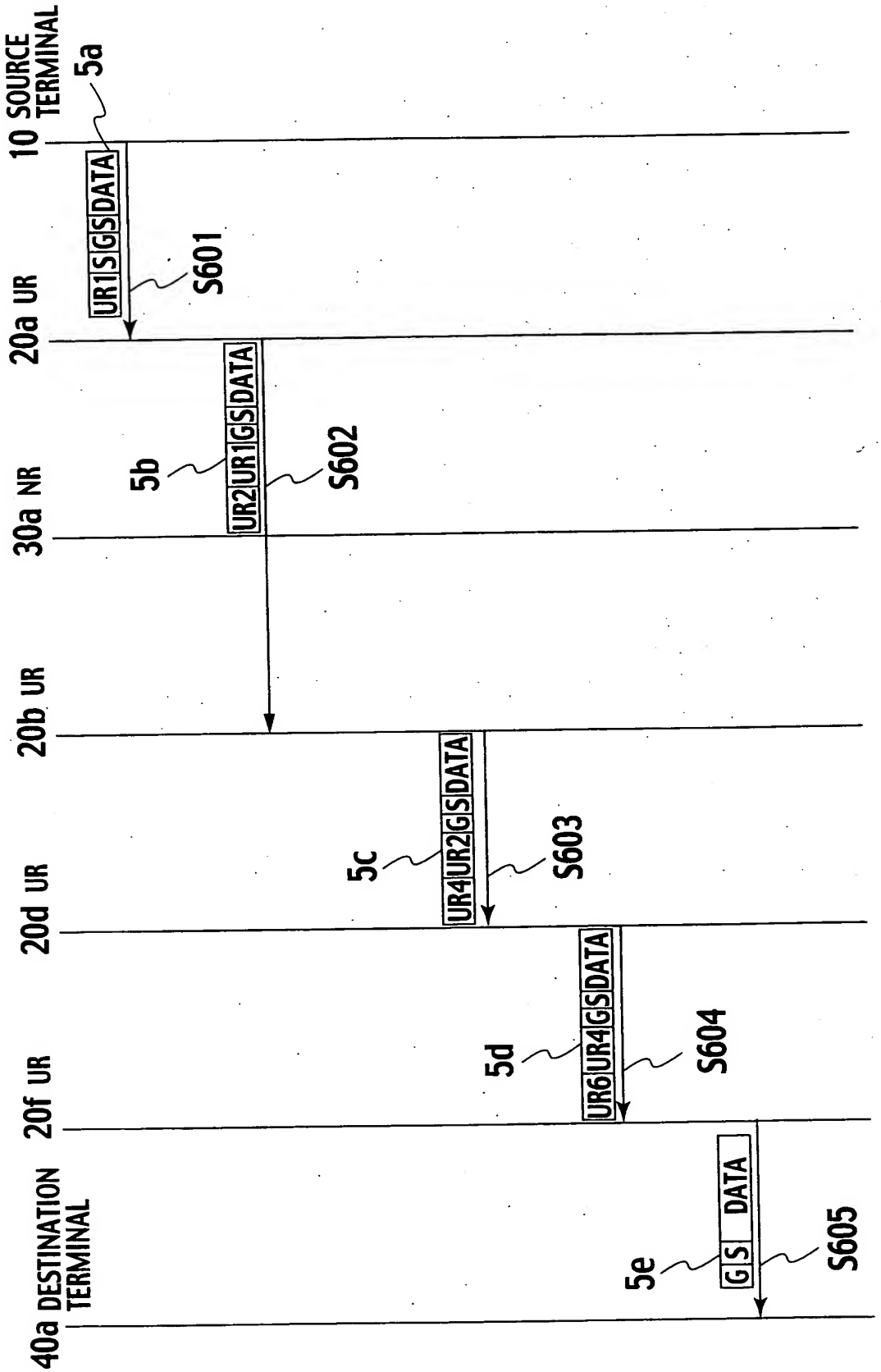

10 SOURCE TERMINAL
5a
UR1 GS DATA
S601
20a UR
5b
UR2 UR1 GS DATA
S602
30a NR
20b UR
5c
UR4 UR2 GS DATA
S603
20d UR
5d
UR6 UR4 GS DATA
S604
20f UR
5e
GS DATA
S605
40a DESTINATION TERMINAL

FIG. 13

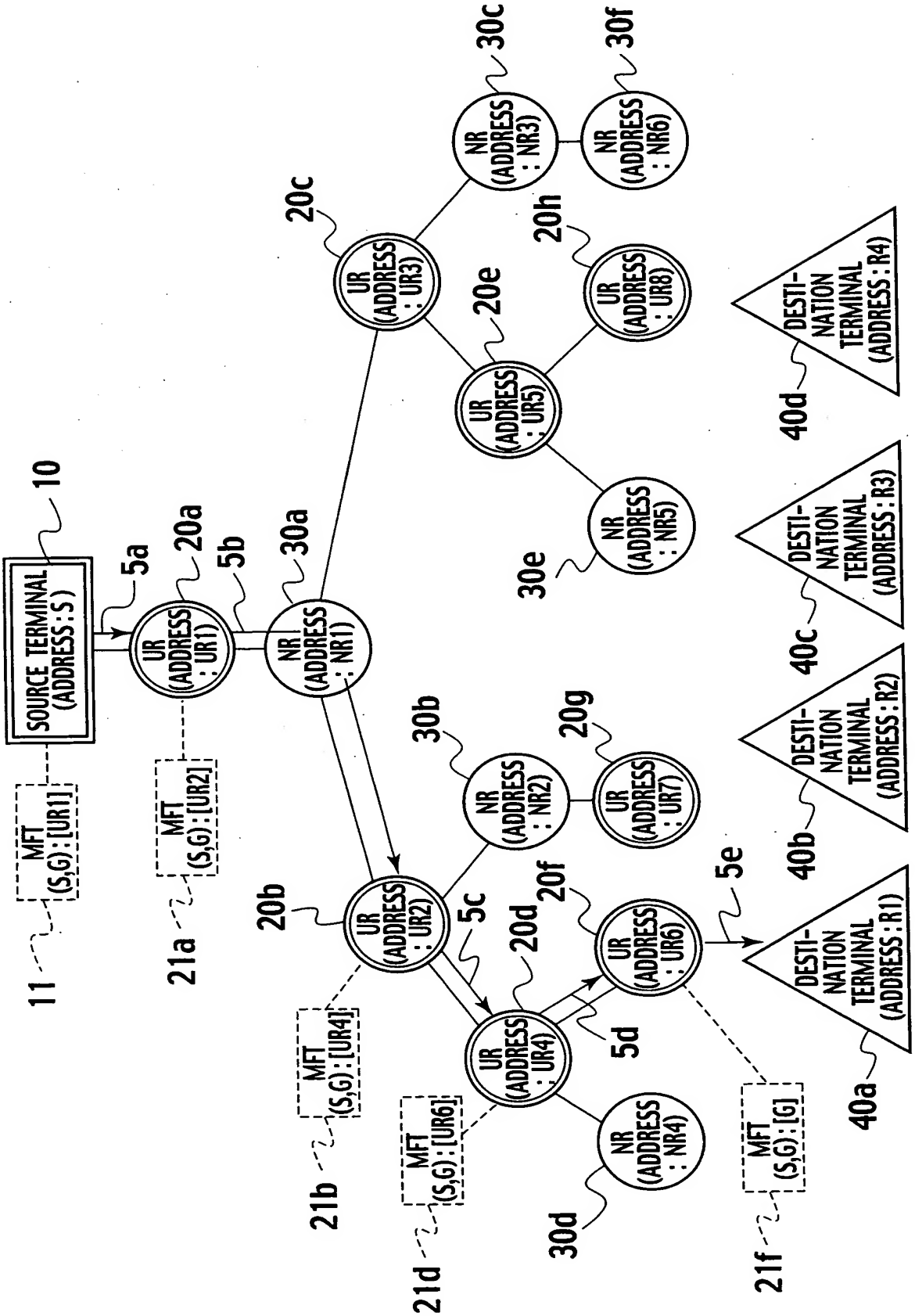

SOURCE TERMINAL (ADDRESS : S)
10
5a
UR (ADDRESS : UR1)
20a
5b
NR (ADDRESS : NR1)
30a
MFT (S,G) : [UR1]
11
MFT (S,G) : [UR2]
21a
UR (ADDRESS : UR2)
20b
5c
NR (ADDRESS : NR2)
30b
UR (ADDRESS : UR7)
20g
MFT (S,G) : [UR4]
21b
UR (ADDRESS : UR4)
20d
5d
MFT (S,G) : [UR6]
21d
NR (ADDRESS : NR4)
30d
UR (ADDRESS : UR6)
20f
5e
MFT (S,G) : [G]
21f
UR (ADDRESS : UR3)
20c
NR (ADDRESS : NR3)
30c
UR (ADDRESS : UR5)
20e
NR (ADDRESS : NR5)
30e
UR (ADDRESS : UR8)
20h
NR (ADDRESS : NR6)
30f
DESTI-NATION TERMINAL (ADDRESS : R1)
40a
DESTI-NATION TERMINAL (ADDRESS : R2)
40b
DESTI-NATION TERMINAL (ADDRESS : R3)
40c
DESTI-NATION TERMINAL (ADDRESS : R4)
40d

FIG. 14

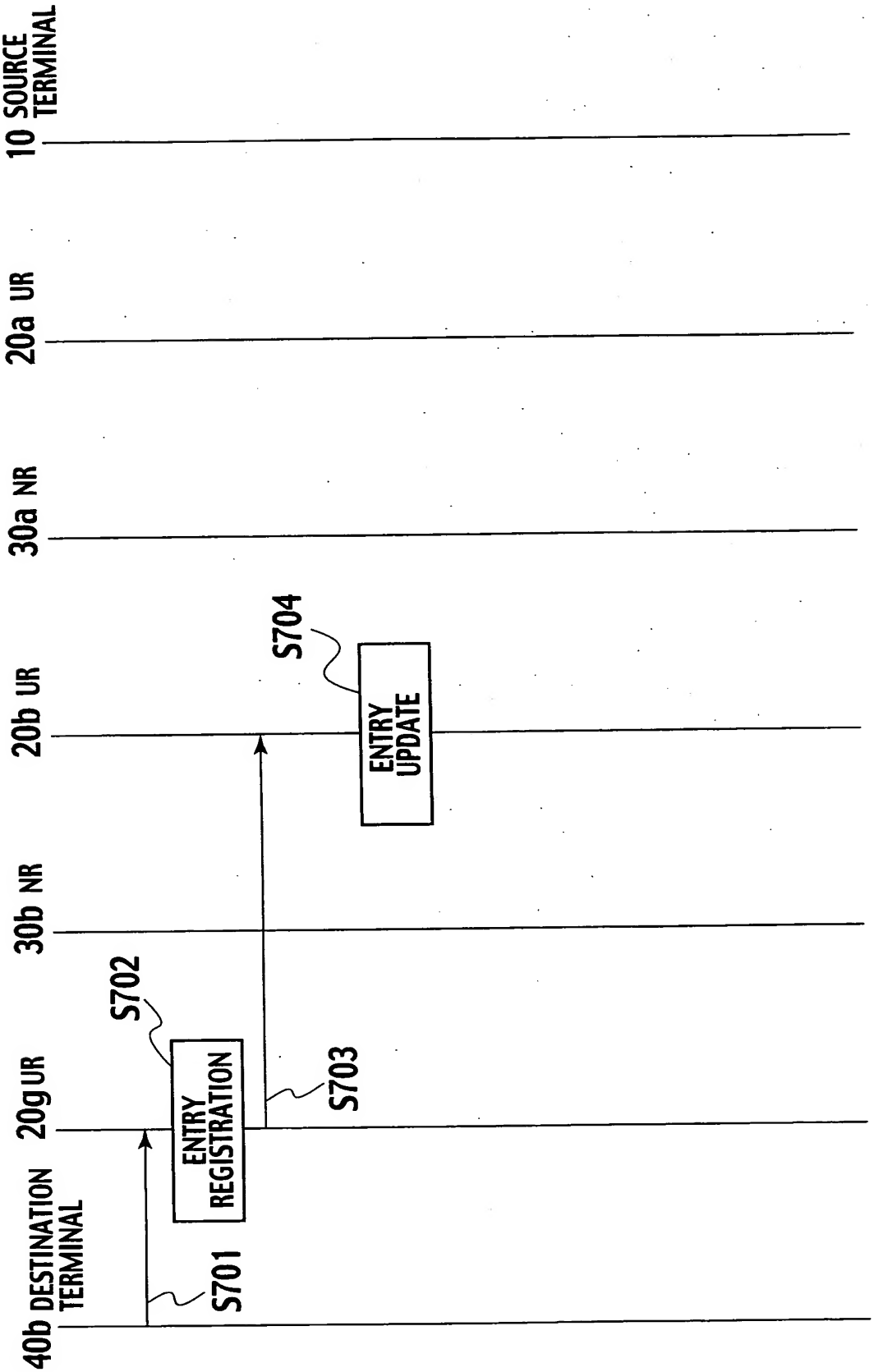

10 SOURCE TERMINAL
20a UR
30a NR
S704
20b UR
ENTRY UPDATE
30b NR
S702
20g UR
ENTRY REGISTRATION
S703
40b DESTINATION TERMINAL
S701

FIG. 15

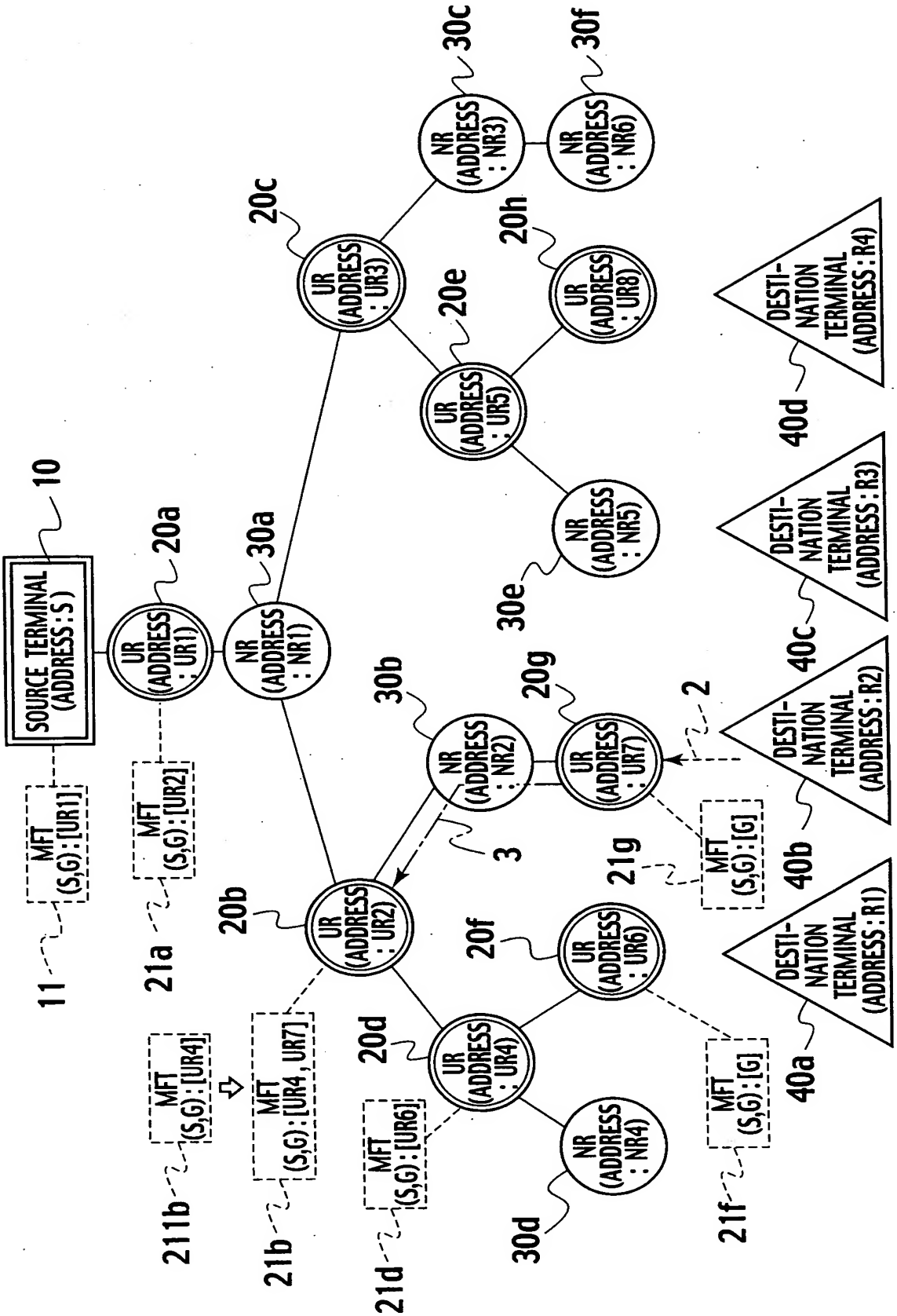

SOURCE TERMINAL (ADDRESS: S)
10
11
MFT (S,G): [UR1]
UR (ADDRESS: UR1)
20a
MFT (S,G): [UR2]
21a
NR (ADDRESS: NR1)
30a
UR (ADDRESS: UR2)
20b
MFT (S,G): [UR4]
211b
MFT (S,G): [UR4, UR7]
21b
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
NR (ADDRESS: NR6)
30f
UR (ADDRESS: UR8)
20h
UR (ADDRESS: UR5)
20e
NR (ADDRESS: NR5)
30e
NR (ADDRESS: NR2)
30b
UR (ADDRESS: UR7)
20g
2
3
MFT (S,G): [G]
21g
UR (ADDRESS: UR4)
20d
MFT (S,G): [UR6]
21d
NR (ADDRESS: NR4)
30d
UR (ADDRESS: UR6)
20f
MFT (S,G): [G]
21f
DESTI-NATION TERMINAL (ADDRESS: R4)
40d
DESTI-NATION TERMINAL (ADDRESS: R3)
40c
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
DESTI-NATION TERMINAL (ADDRESS: R1)
40a

FIG. 16

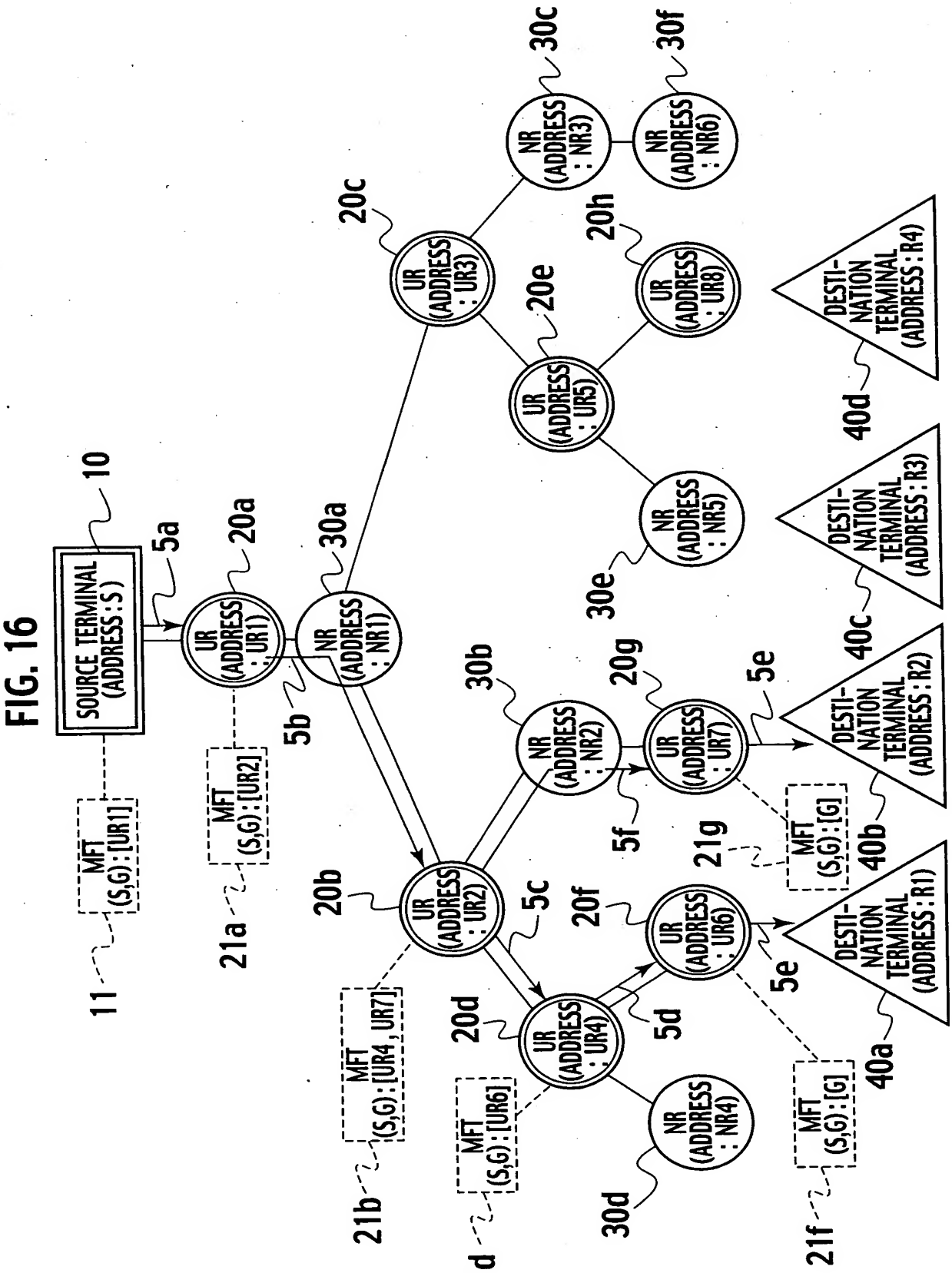

SOURCE TERMINAL (ADDRESS: S)
10
5a
UR (ADDRESS: UR1)
20a
NR (ADDRESS: NR1)
30a
5b
MFT (S,G): [UR1]
11
MFT (S,G): [UR2]
21a
UR (ADDRESS: UR2)
20b
MFT (S,G): [UR4, UR7]
21b
5c
UR (ADDRESS: UR4)
20d
MFT (S,G): [UR6]
21d
NR (ADDRESS: NR4)
30d
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
NR (ADDRESS: NR6)
30f
UR (ADDRESS: UR5)
20e
UR (ADDRESS: UR8)
20h
NR (ADDRESS: NR5)
30e
NR (ADDRESS: NR2)
30b
UR (ADDRESS: UR7)
20g
5e
5f
MFT (S,G): [G]
21g
UR (ADDRESS: UR6)
20f
5d
5e
MFT (S,G): [G]
21f
DESTI-NATION TERMINAL (ADDRESS: R4)
40d
DESTI-NATION TERMINAL (ADDRESS: R3)
40c
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
DESTI-NATION TERMINAL (ADDRESS: R1)
40a

FIG. 17

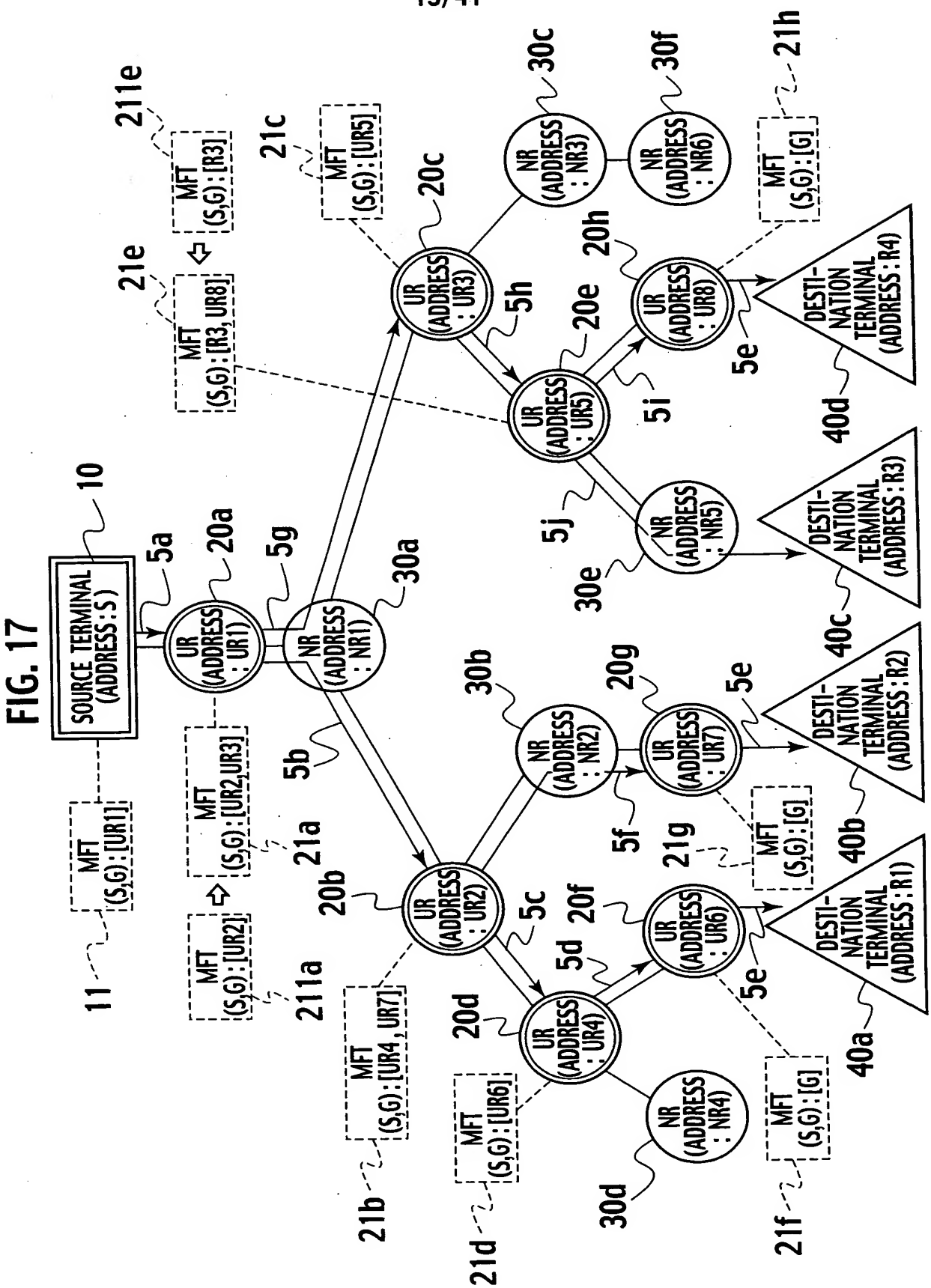

SOURCE TERMINAL (ADDRESS: S)
10
11
MFT (S,G): [UR1]
5a
UR (ADDRESS: UR1)
20a
MFT (S,G): [UR2]
211a
MFT (S,G): [UR2,UR3]
21a
5b
NR (ADDRESS: NR1)
30a
5g
MFT (S,G): [UR4, UR7]
21b
UR (ADDRESS: UR2)
20b
5c
MFT (S,G): [UR6]
21d
UR (ADDRESS: UR4)
20d
5d
NR (ADDRESS: NR4)
30d
MFT (S,G): [UR3]
211e
MFT (S,G): [R3, UR8]
21e
MFT (S,G): [UR5]
21c
UR (ADDRESS: UR3)
20c
5h
NR (ADDRESS: NR2)
30b
5f
UR (ADDRESS: UR5)
20e
5j
NR (ADDRESS: NR5)
30e
NR (ADDRESS: NR3)
30c
UR (ADDRESS: UR8)
20h
5i
NR (ADDRESS: NR6)
30f
MFT (S,G): [G]
21h
5e
DESTI-NATION TERMINAL (ADDRESS: R4)
40d
DESTI-NATION TERMINAL (ADDRESS: R3)
40c
UR (ADDRESS: UR7)
20g
5e
MFT (S,G): [G]
21g
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
UR (ADDRESS: UR6)
20f
5e
MFT (S,G): [G]
21f
DESTI-NATION TERMINAL (ADDRESS: R1)
40a

FIG. 18

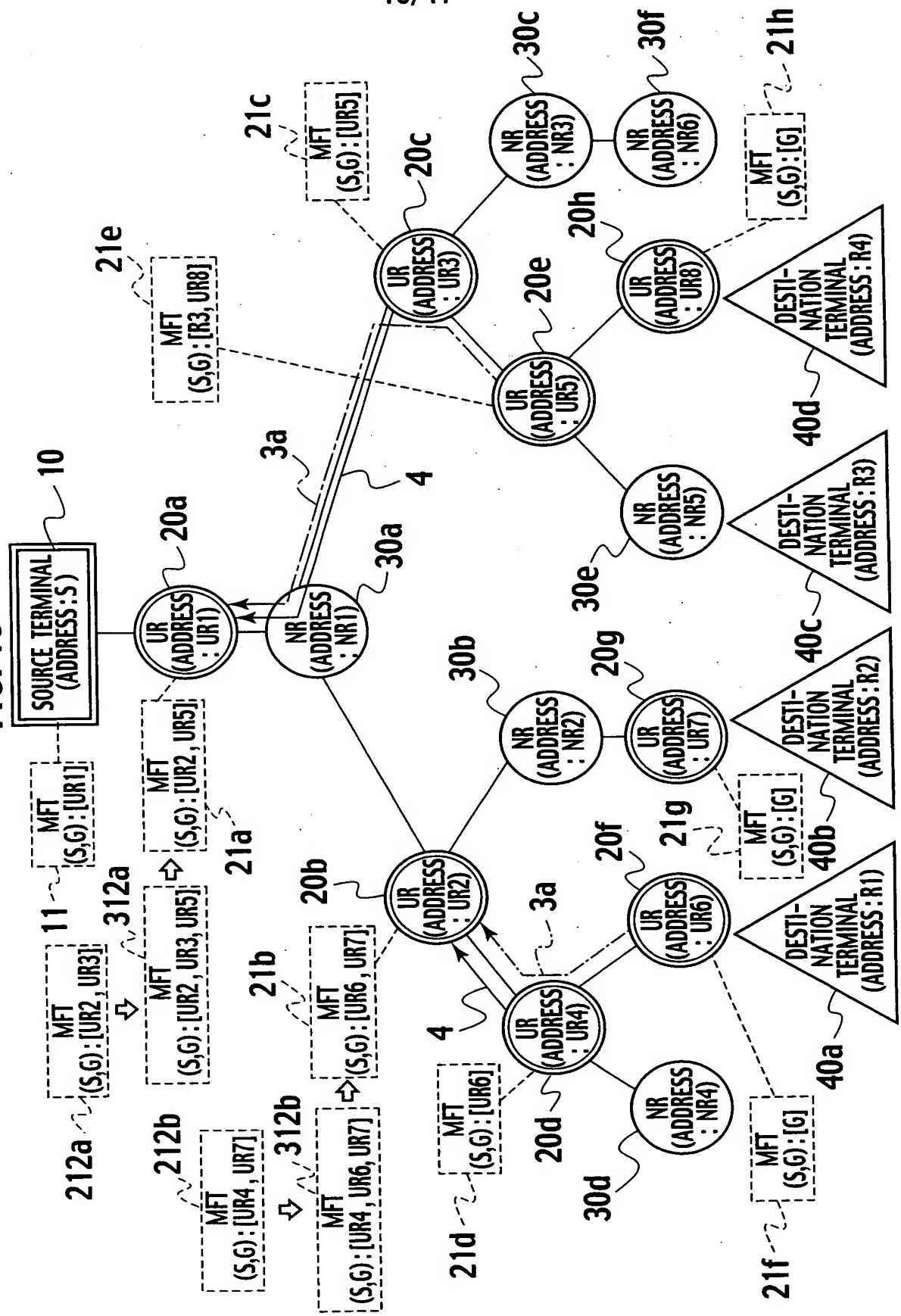

SOURCE TERMINAL (ADDRESS: S)
10
UR (ADDRESS: UR1)
20a
NR (ADDRESS: NR1)
30a
3a
4
MFT (S,G): [UR1]
11
MFT (S,G): [UR2, UR3]
212a
312a
MFT (S,G): [UR2, UR3, UR5]
MFT (S,G): [UR2, UR5]
21a
UR (ADDRESS: UR2)
20b
NR (ADDRESS: NR2)
30b
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
MFT (S,G): [UR5]
21c
MFT (S,G): [R3, UR8]
21e
UR (ADDRESS: UR5)
20e
NR (ADDRESS: NR5)
30e
UR (ADDRESS: UR7)
20g
MFT (S,G): [G]
21g
UR (ADDRESS: UR8)
20h
NR (ADDRESS: NR6)
30f
MFT (S,G): [G]
21h
DESTI-NATION TERMINAL (ADDRESS: R4)
40d
DESTI-NATION TERMINAL (ADDRESS: R3)
40c
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
MFT (S,G): [UR6, UR7]
21b
MFT (S,G): [UR4, UR7]
212b
312b
MFT (S,G): [UR4, UR6, UR7]
UR (ADDRESS: UR4)
20d
NR (ADDRESS: NR4)
30d
MFT (S,G): [UR6]
21d
UR (ADDRESS: UR6)
20f
MFT (S,G): [G]
21f
DESTI-NATION TERMINAL (ADDRESS: R1)
40a

FIG. 19

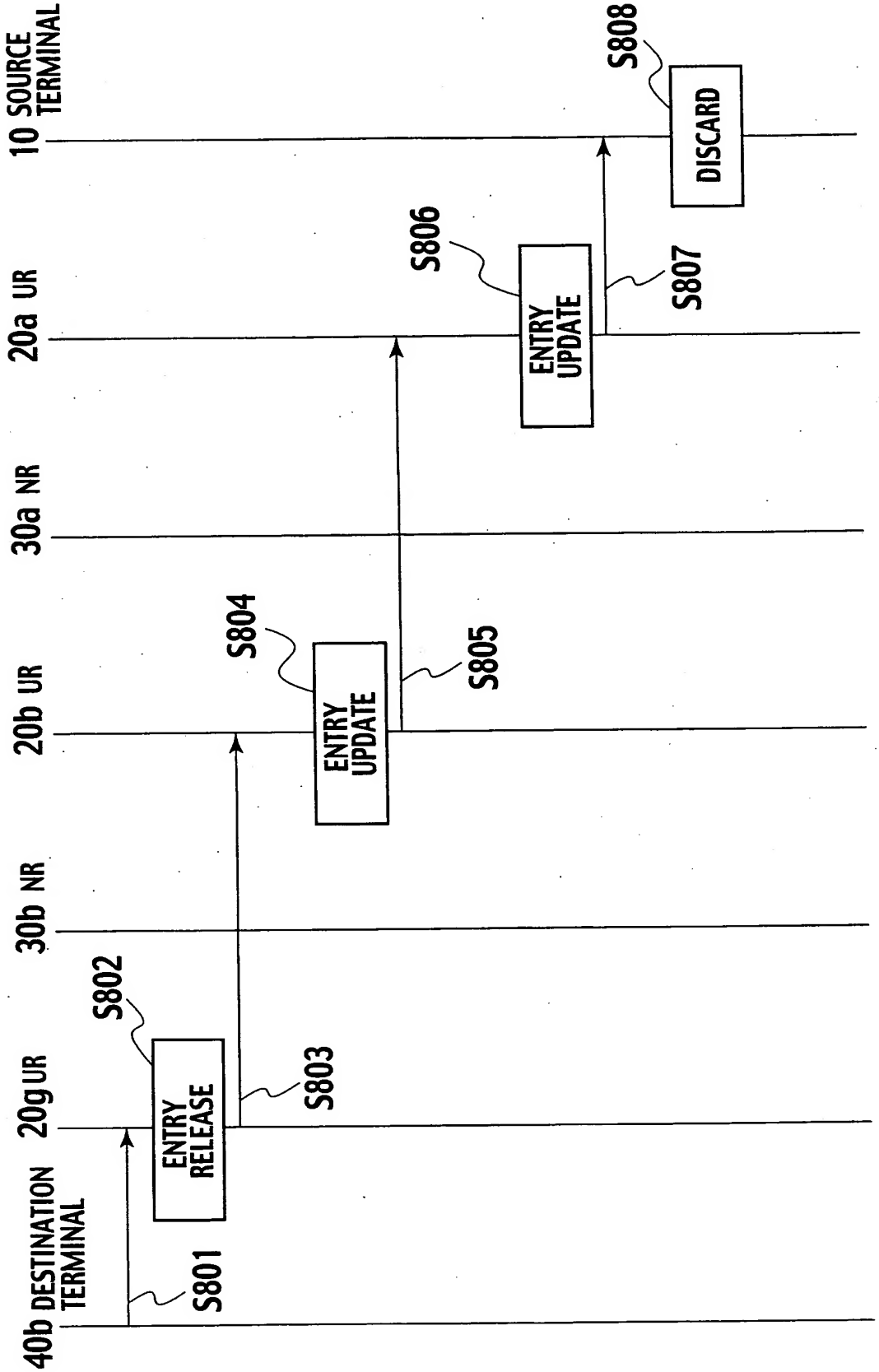

10 SOURCE TERMINAL
20a UR
30a NR
20b UR
30b NR
20g UR
40b DESTINATION TERMINAL
S801
S802
ENTRY RELEASE
S803
S804
ENTRY UPDATE
S805
S806
ENTRY UPDATE
S807
S808
DISCARD

FIG. 20

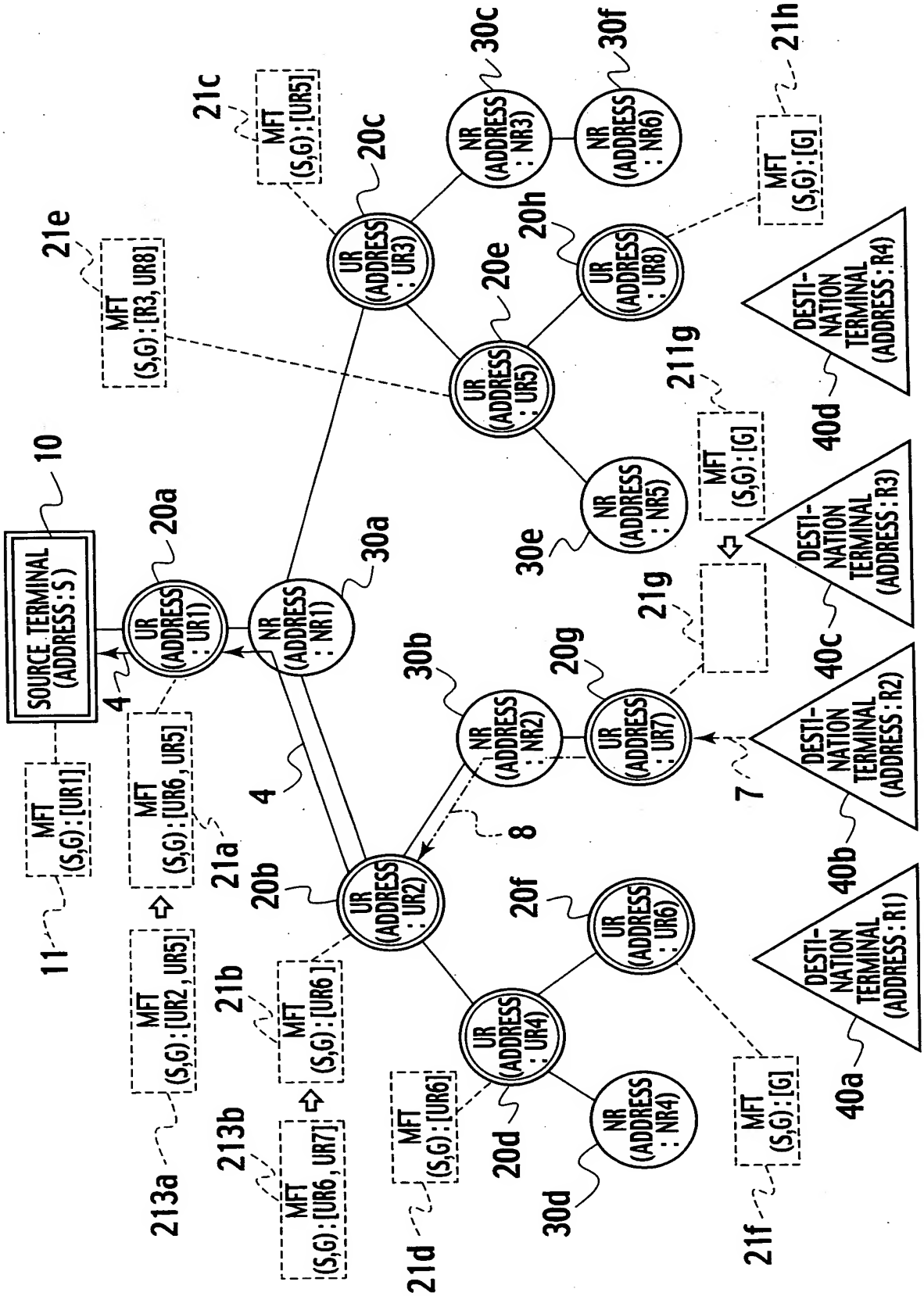

SOURCE TERMINAL (ADDRESS: S)
10
UR (ADDRESS: UR1)
20a
NR (ADDRESS: NR1)
30a
UR (ADDRESS: UR2)
20b
NR (ADDRESS: NR2)
30b
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
UR (ADDRESS: UR4)
20d
NR (ADDRESS: NR4)
30d
UR (ADDRESS: UR5)
20e
NR (ADDRESS: NR5)
30e
UR (ADDRESS: UR6)
20f
UR (ADDRESS: UR7)
20g
UR (ADDRESS: UR8)
20h
NR (ADDRESS: NR6)
30f
DESTINATION TERMINAL (ADDRESS: R1)
40a
DESTINATION TERMINAL (ADDRESS: R2)
40b
DESTINATION TERMINAL (ADDRESS: R3)
40c
DESTINATION TERMINAL (ADDRESS: R4)
40d
MFT (S,G): [UR1]
11
MFT (S,G): [UR6, UR5]
21a
MFT (S,G): [UR2, UR5]
213a
MFT (S,G): [UR6]
21b
MFT (S,G): [UR6, UR7]
213b
MFT (S,G): [UR6]
21d
MFT (S,G): [UR5]
21c
MFT (S,G): [R3, UR8]
21e
MFT (S,G): [G]
21f
MFT (S,G): [G]
211g
MFT (S,G): [G]
21h
4
4
8
7

FIG. 21

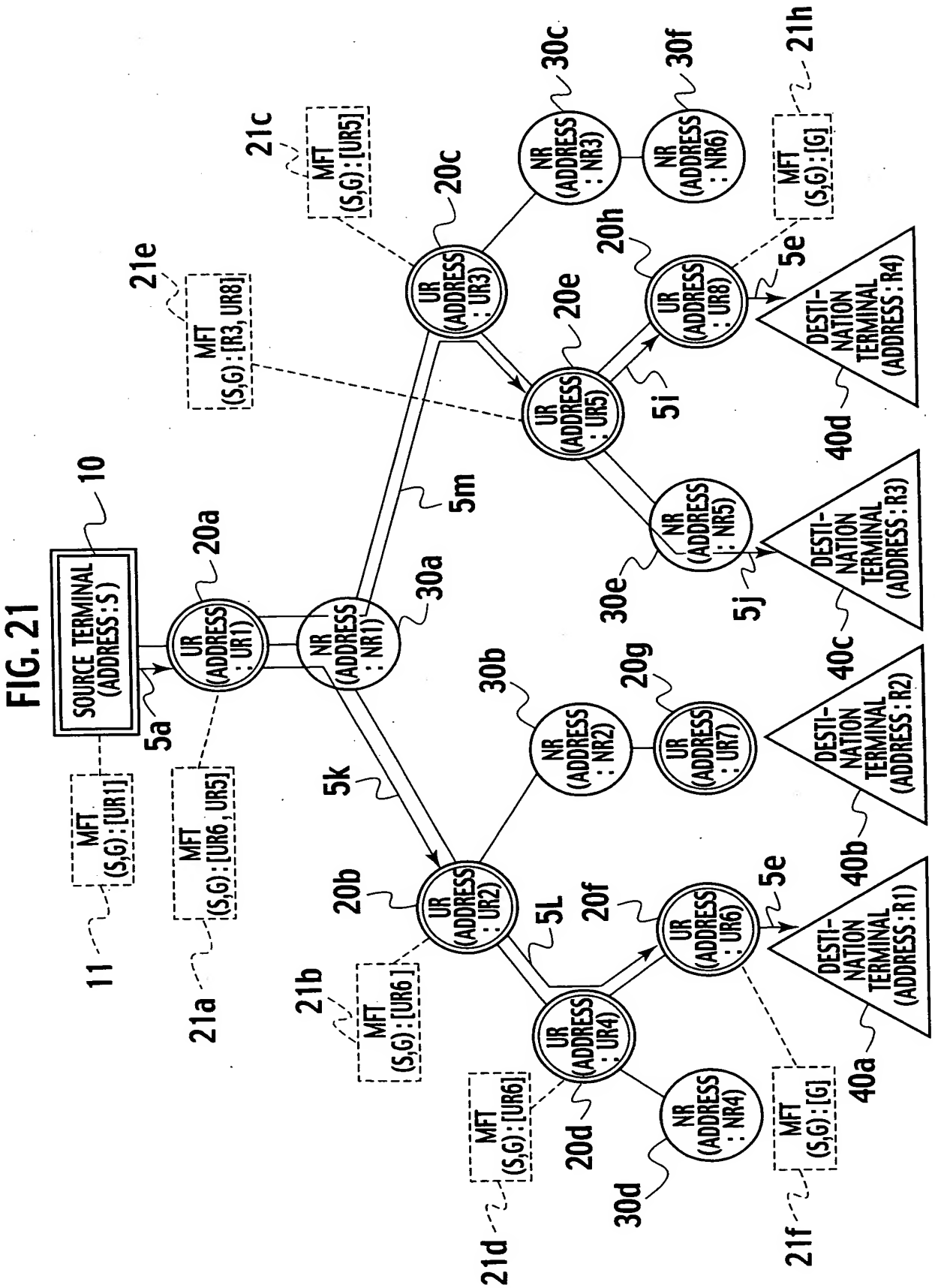

SOURCE TERMINAL (ADDRESS: S)
10
UR (ADDRESS: UR1)
20a
NR (ADDRESS: NR1)
30a
5a
5m
MFT (S,G): [UR1]
11
MFT (S,G): [UR6, UR5]
21a
MFT (S,G): [R3, UR8]
21e
MFT (S,G): [UR5]
21c
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
NR (ADDRESS: NR6)
30f
MFT (S,G): [G]
21h
UR (ADDRESS: UR5)
20e
UR (ADDRESS: UR8)
20h
5e
5i
DESTI-NATION TERMINAL (ADDRESS: R4)
40d
NR (ADDRESS: NR5)
30e
5j
DESTI-NATION TERMINAL (ADDRESS: R3)
40c
5k
UR (ADDRESS: UR2)
20b
NR (ADDRESS: NR2)
30b
UR (ADDRESS: UR7)
20g
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
MFT (S,G): [UR6]
21b
5L
UR (ADDRESS: UR6)
20f
5e
DESTI-NATION TERMINAL (ADDRESS: R1)
40a
UR (ADDRESS: UR4)
20d
NR (ADDRESS: NR4)
30d
MFT (S,G): [UR6]
21d
MFT (S,G): [G]
21f

FIG. 22

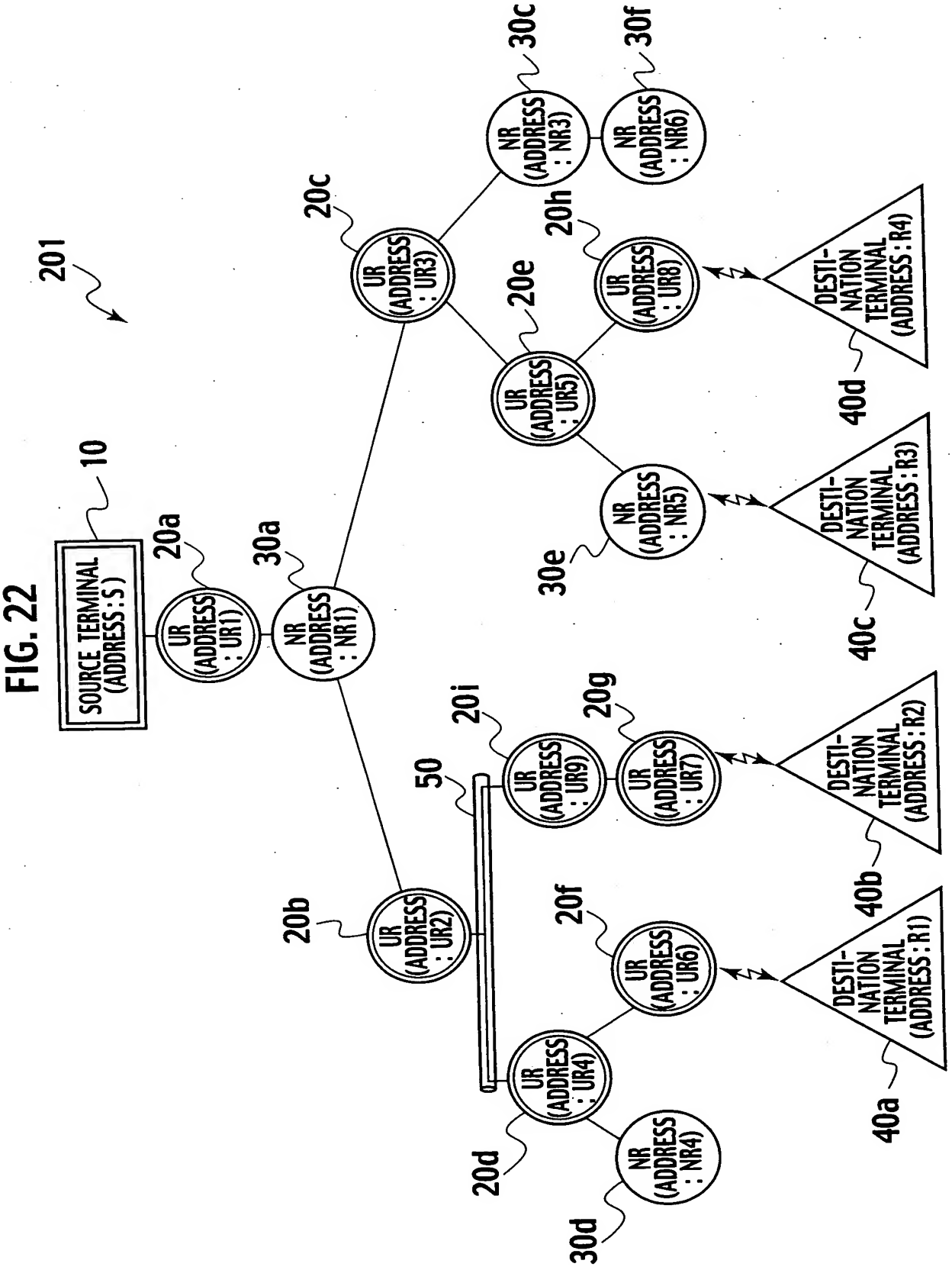

201
SOURCE TERMINAL (ADDRESS : S)
10
UR (ADDRESS : UR1)
20a
NR (ADDRESS : NR1)
30a
UR (ADDRESS : UR2)
20b
UR (ADDRESS : UR3)
20c
NR (ADDRESS : NR4)
30d
UR (ADDRESS : UR4)
20d
UR (ADDRESS : UR5)
20e
NR (ADDRESS : NR5)
30e
UR (ADDRESS : UR6)
20f
UR (ADDRESS : UR7)
20g
NR (ADDRESS : NR3)
30c
UR (ADDRESS : UR8)
20h
UR (ADDRESS : UR9)
20i
NR (ADDRESS : NR6)
30f
50
DESTI-NATION TERMINAL (ADDRESS : R1)
40a
DESTI-NATION TERMINAL (ADDRESS : R2)
40b
DESTI-NATION TERMINAL (ADDRESS : R3)
40c
DESTI-NATION TERMINAL (ADDRESS : R4)
40d

FIG. 23

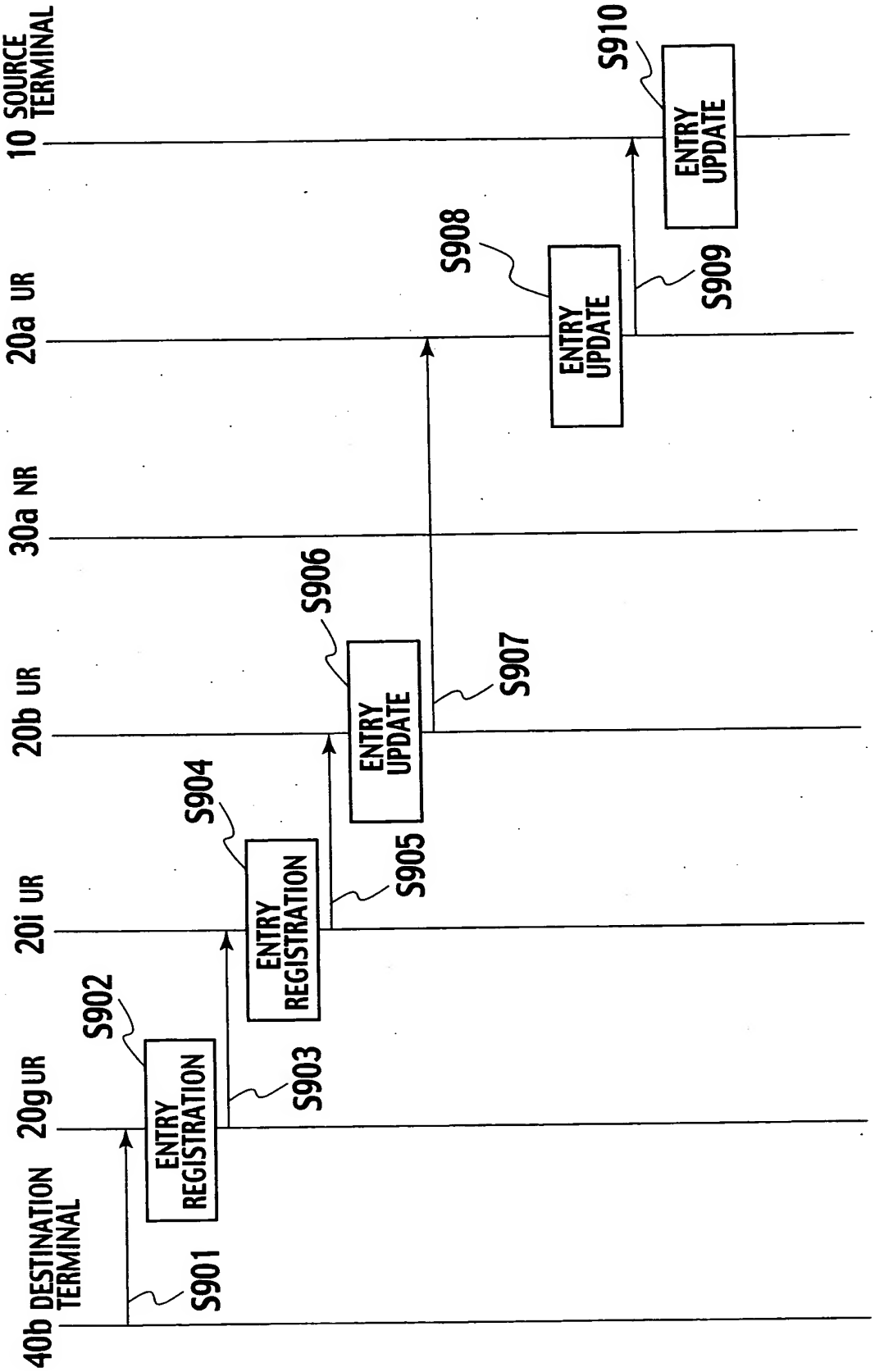

40b DESTINATION TERMINAL
20g UR
20i UR
20b UR
30a NR
20a UR
10 SOURCE TERMINAL
S901
S902
ENTRY REGISTRATION
S903
S904
ENTRY REGISTRATION
S905
S906
ENTRY UPDATE
S907
S908
ENTRY UPDATE
S909
S910
ENTRY UPDATE

FIG. 24

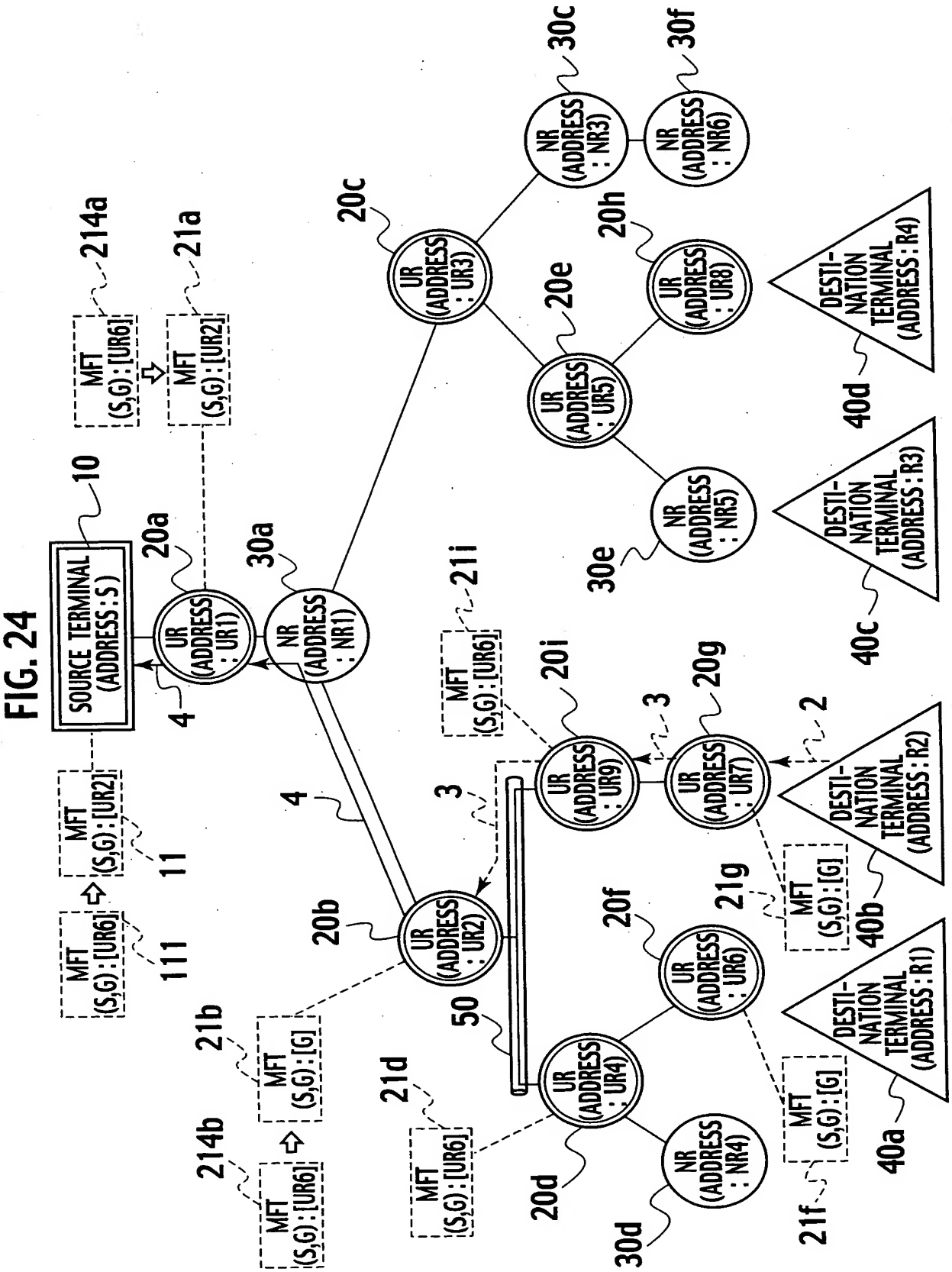

SOURCE TERMINAL (ADDRESS: S)
10
UR (ADDRESS: UR1)
20a
NR (ADDRESS: NR1)
30a
UR (ADDRESS: UR2)
20b
UR (ADDRESS: UR3)
20c
UR (ADDRESS: UR4)
20d
UR (ADDRESS: UR5)
20e
UR (ADDRESS: UR6)
20f
UR (ADDRESS: UR7)
20g
UR (ADDRESS: UR8)
20h
UR (ADDRESS: UR9)
20i
NR (ADDRESS: NR3)
30c
NR (ADDRESS: NR4)
30d
NR (ADDRESS: NR5)
30e
NR (ADDRESS: NR6)
30f
DESTINATION TERMINAL (ADDRESS: R1)
40a
DESTINATION TERMINAL (ADDRESS: R2)
40b
DESTINATION TERMINAL (ADDRESS: R3)
40c
DESTINATION TERMINAL (ADDRESS: R4)
40d
MFT (S,G): [UR2]
11
MFT (S,G): [UR6]
111
MFT (S,G): [UR6]
214a
MFT (S,G): [UR2]
21a
MFT (S,G): [G]
21b
MFT (S,G): [UR6]
214b
MFT (S,G): [UR6]
21d
MFT (S,G): [UR6]
21i
MFT (S,G): [G]
21g
MFT (S,G): [G]
21f
4
3
2
50

FIG. 25

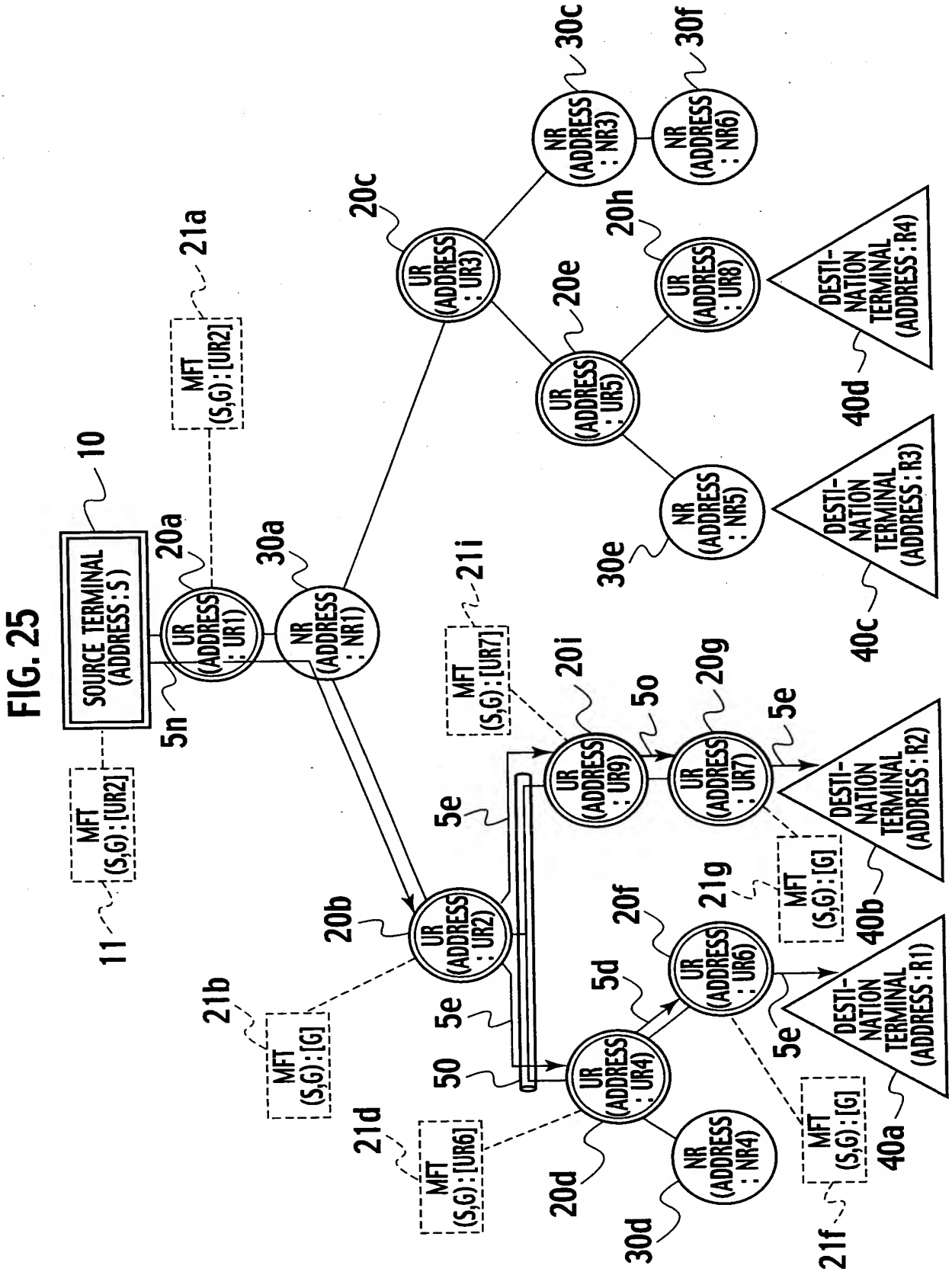

SOURCE TERMINAL (ADDRESS: S)
10
11
MFT (S,G): [UR2]
5n
UR (ADDRESS: UR1)
20a
MFT (S,G): [UR2]
21a
NR (ADDRESS: NR1)
30a
UR (ADDRESS: UR2)
20b
MFT (S,G): [G]
21b
5e
50
UR (ADDRESS: UR4)
20d
MFT (S,G): [UR6]
21d
NR (ADDRESS: NR4)
30d
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
NR (ADDRESS: NR6)
30f
UR (ADDRESS: UR5)
20e
UR (ADDRESS: UR8)
20h
NR (ADDRESS: NR5)
30e
DESTI-NATION TERMINAL (ADDRESS: R4)
40d
DESTI-NATION TERMINAL (ADDRESS: R3)
40c
MFT (S,G): [UR7]
21i
UR (ADDRESS: UR9)
20i
5o
UR (ADDRESS: UR7)
20g
5e
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
MFT (S,G): [G]
21g
UR (ADDRESS: UR6)
20f
5d
5e
DESTI-NATION TERMINAL (ADDRESS: R1)
40a
MFT (S,G): [G]
21f

FIG. 26

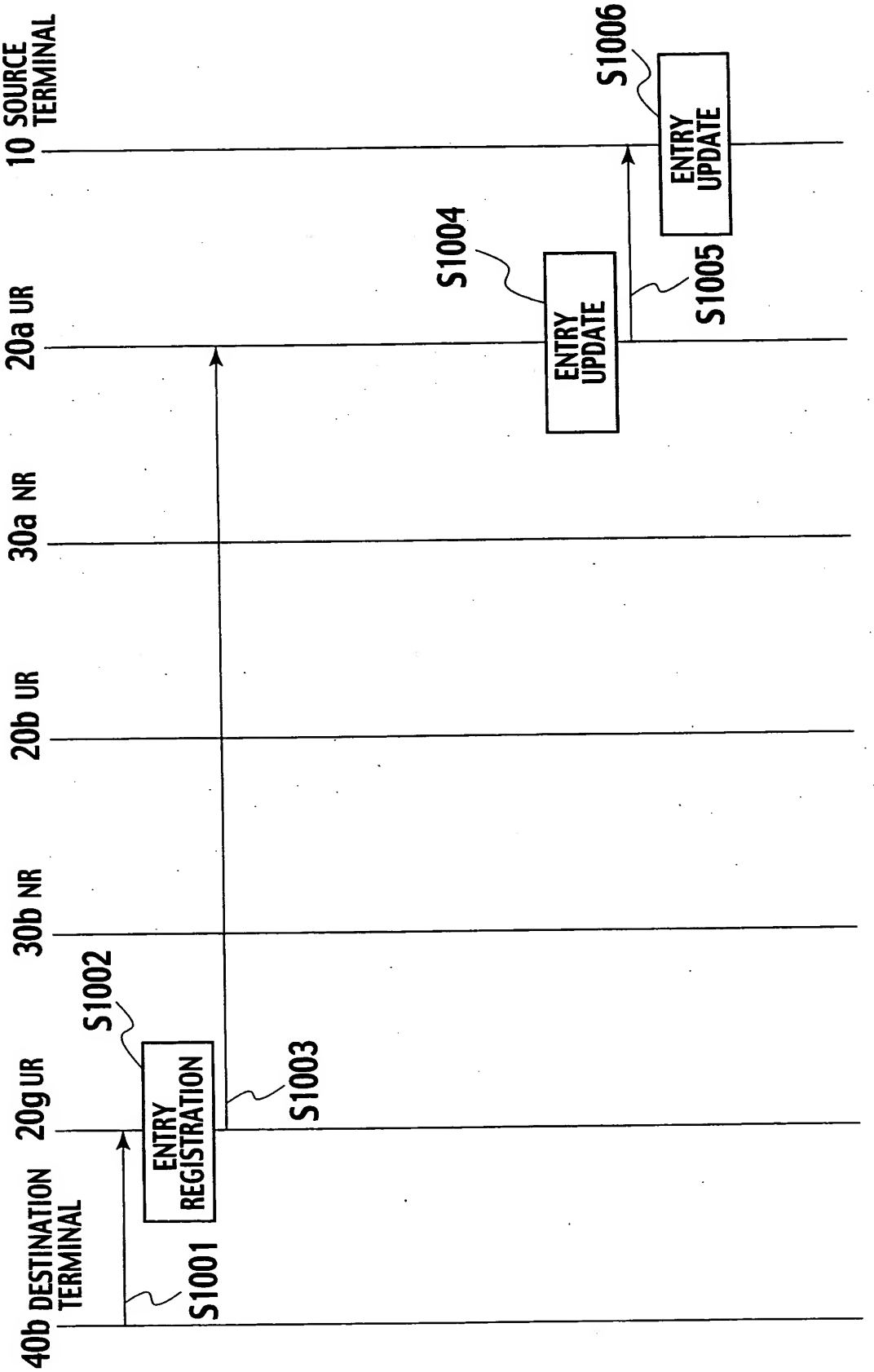

10 SOURCE TERMINAL
20a UR
30a NR
20b UR
30b NR
20g UR
40b DESTINATION TERMINAL
S1001
S1002
ENTRY REGISTRATION
S1003
S1004
ENTRY UPDATE
S1005
S1006
ENTRY UPDATE

FIG. 27

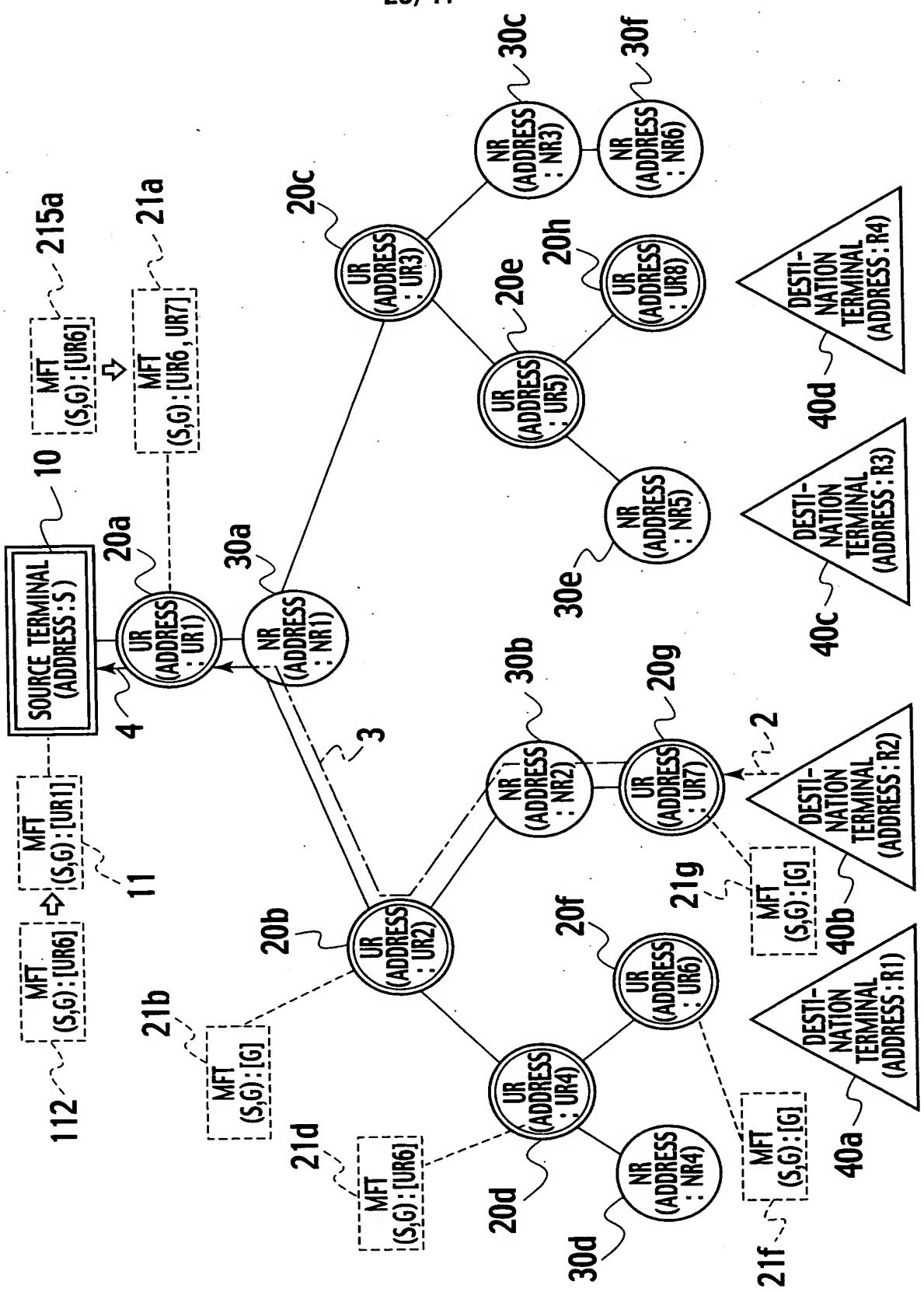

SOURCE TERMINAL (ADDRESS: S)
10
UR (ADDRESS: UR1)
20a
NR (ADDRESS: NR1)
30a
UR (ADDRESS: UR2)
20b
NR (ADDRESS: NR2)
30b
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR3)
30c
UR (ADDRESS: UR4)
20d
NR (ADDRESS: NR4)
30d
UR (ADDRESS: UR5)
20e
NR (ADDRESS: NR5)
30e
UR (ADDRESS: UR6)
20f
UR (ADDRESS: UR7)
20g
NR (ADDRESS: NR6)
30f
UR (ADDRESS: UR8)
20h
MFT (S,G): [UR6]
215a
MFT (S,G): [UR6, UR7]
21a
MFT (S,G): [UR1]
11
MFT (S,G): [UR6]
112
MFT (S,G): [G]
21b
MFT (S,G): [UR6]
21d
MFT (S,G): [G]
21g
MFT (S,G): [G]
21f
DESTI-NATION TERMINAL (ADDRESS: R4)
40d
DESTI-NATION TERMINAL (ADDRESS: R3)
40c
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
DESTI-NATION TERMINAL (ADDRESS: R1)
40a
1
2
3
4

FIG. 28

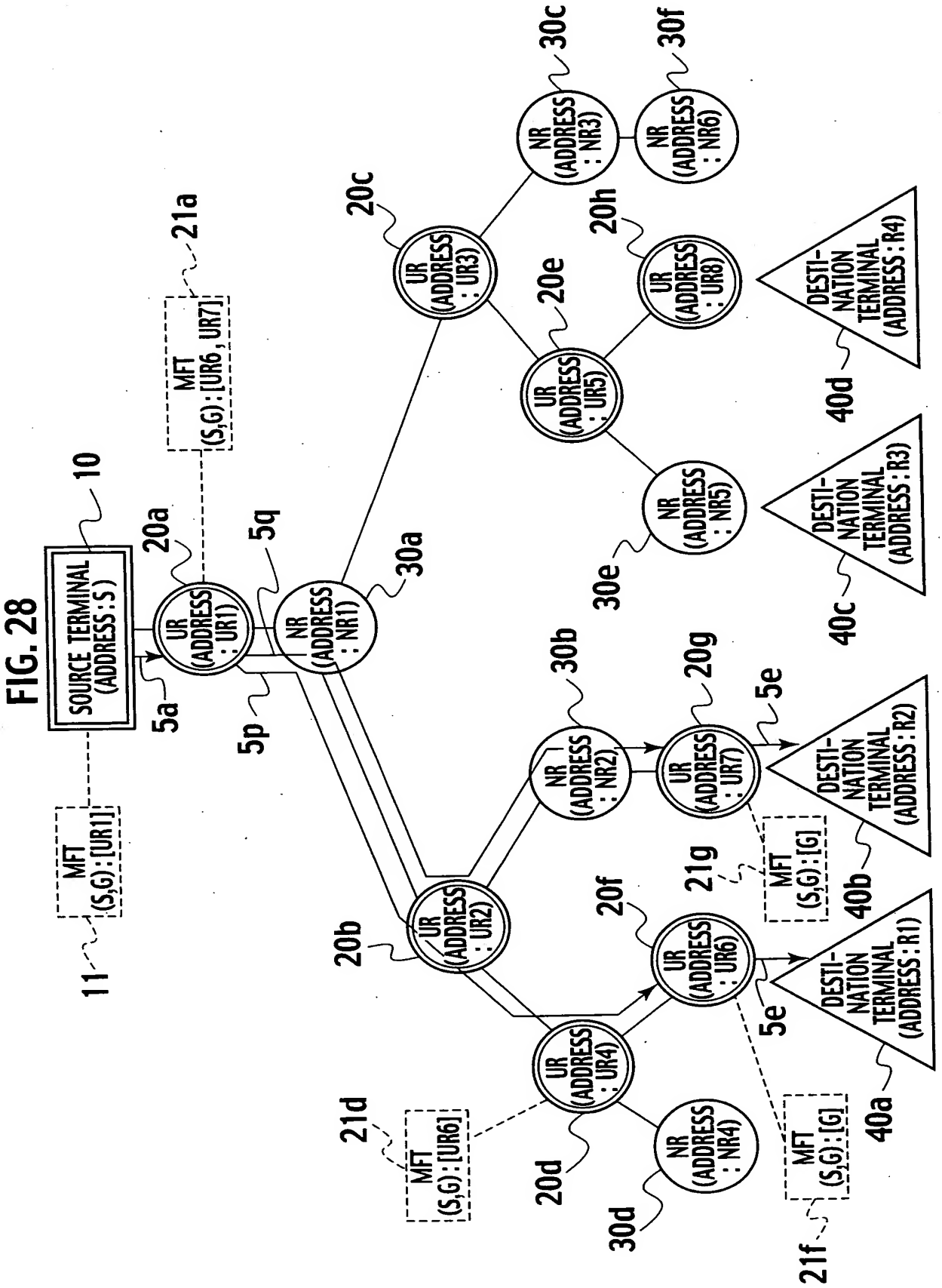

SOURCE TERMINAL (ADDRESS : S)
10
5a
MFT (S,G) : [UR1]
11
UR (ADDRESS : UR1)
20a
MFT (S,G) : [UR6, UR7]
21a
5p
5q
NR (ADDRESS : NR1)
30a
UR (ADDRESS : UR2)
20b
UR (ADDRESS : UR3)
20c
NR (ADDRESS : NR2)
30b
UR (ADDRESS : UR4)
20d
MFT (S,G) : [UR6]
21d
NR (ADDRESS : NR4)
30d
UR (ADDRESS : UR5)
20e
NR (ADDRESS : NR5)
30e
UR (ADDRESS : UR6)
20f
MFT (S,G) : [G]
21f
UR (ADDRESS : UR7)
20g
MFT (S,G) : [G]
21g
UR (ADDRESS : UR8)
20h
NR (ADDRESS : NR3)
30c
NR (ADDRESS : NR6)
30f
DESTI-NATION TERMINAL (ADDRESS : R1)
40a
DESTI-NATION TERMINAL (ADDRESS : R2)
40b
DESTI-NATION TERMINAL (ADDRESS : R3)
40c
DESTI-NATION TERMINAL (ADDRESS : R4)
40d
5e
5e

FIG. 29

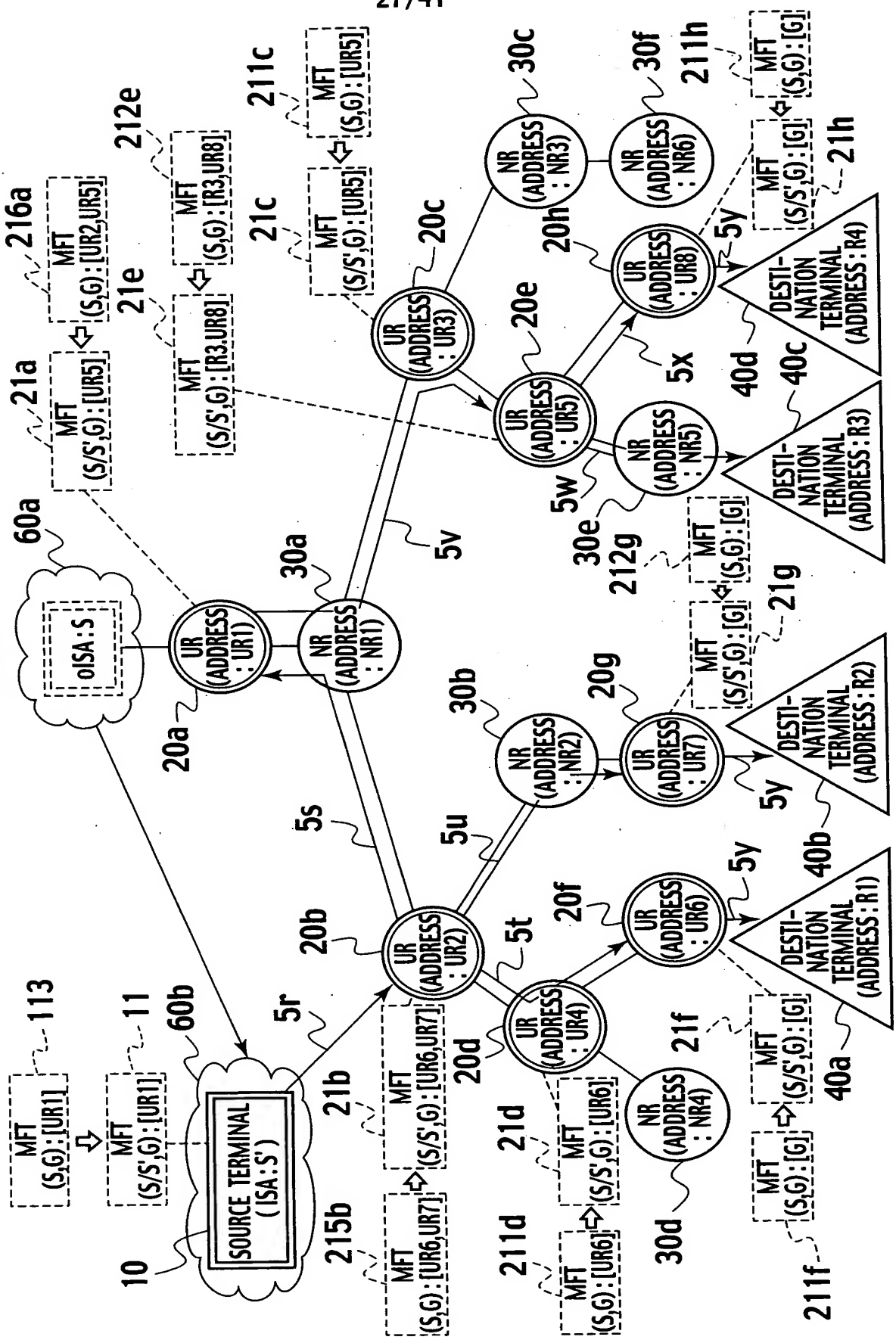

SOURCE TERMINAL (ISA:S')
10
oISA:S
60a
60b
UR (ADDRESS: UR1)
NR (ADDRESS: NR1)
UR (ADDRESS: UR2)
NR (ADDRESS: NR2)
UR (ADDRESS: UR3)
NR (ADDRESS: NR3)
UR (ADDRESS: UR4)
NR (ADDRESS: NR4)
UR (ADDRESS: UR5)
NR (ADDRESS: NR5)
UR (ADDRESS: UR6)
UR (ADDRESS: UR7)
NR (ADDRESS: NR6)
UR (ADDRESS: UR8)
DESTINATION TERMINAL (ADDRESS: R1)
DESTINATION TERMINAL (ADDRESS: R2)
DESTINATION TERMINAL (ADDRESS: R3)
DESTINATION TERMINAL (ADDRESS: R4)
MFT (S,G): [UR1]
MFT (S/S',G): [UR1]
MFT (S/S',G): [UR6,UR7]
MFT (S,G): [UR6,UR7]
MFT (S/S',G): [UR6]
MFT (S,G): [UR6]
MFT (S/S',G): [UR5]
MFT (S,G): [UR5]
MFT (S/S',G): [R3,UR8]
MFT (S,G): [R3,UR8]
MFT (S,G): [UR2,UR5]
MFT (S/S',G): [UR5]
MFT (S/S',G): [G]
MFT (S,G): [G]
MFT (S/S',G): [G]
MFT (S,G): [G]
MFT (S/S',G): [G]
MFT (S,G): [G]
MFT (S,G): [G]
MFT (S,G): [G]
11
113
5r
5s
5t
5u
5v
5w
5x
5y
20a
20b
20c
20d
20e
20f
20g
20h
21a
21b
21c
21d
21e
21f
21g
21h
211c
211d
211f
211h
212e
212g
215b
216a
30a
30b
30c
30d
30e
30f
40a
40b
40c
40d

FIG. 30

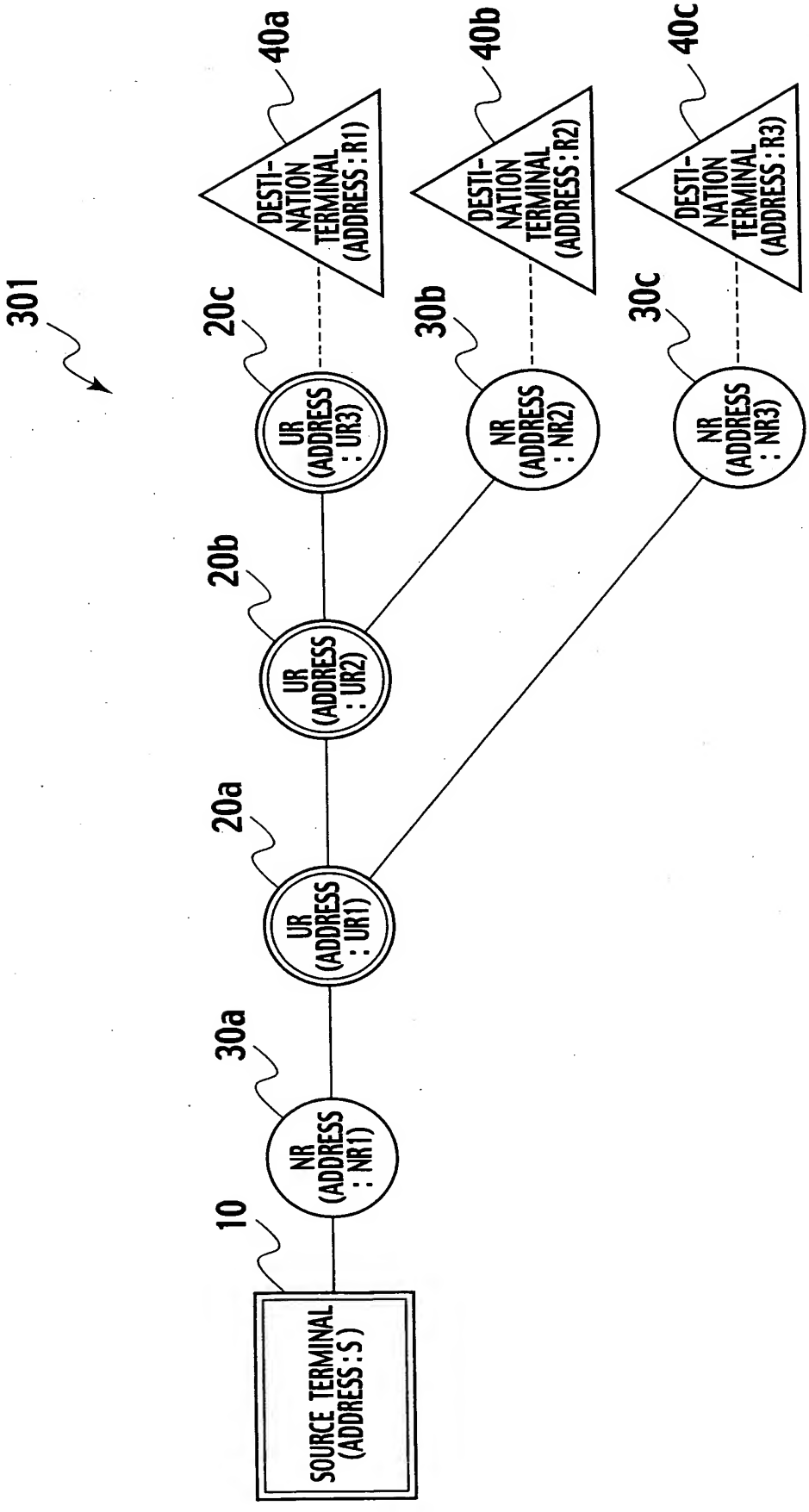

301
10
SOURCE TERMINAL (ADDRESS : S)
30a
NR (ADDRESS : NR1)
20a
UR (ADDRESS : UR1)
20b
UR (ADDRESS : UR2)
20c
UR (ADDRESS : UR3)
30b
NR (ADDRESS : NR2)
30c
NR (ADDRESS : NR3)
40a
DESTI-NATION TERMINAL (ADDRESS : R1)
40b
DESTI-NATION TERMINAL (ADDRESS : R2)
40c
DESTI-NATION TERMINAL (ADDRESS : R3)

FIG. 31

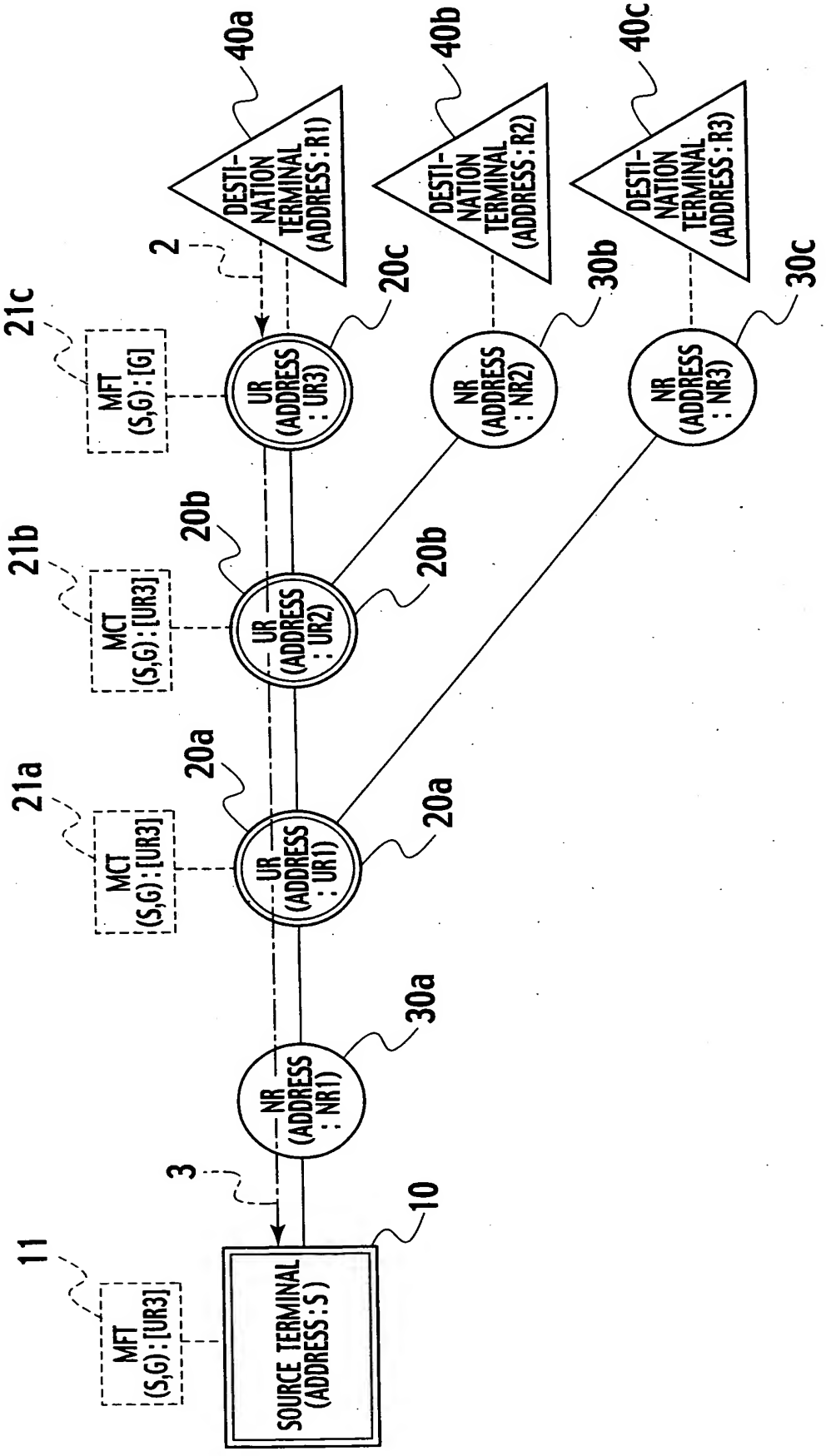

SOURCE TERMINAL (ADDRESS : S)
MFT (S,G) : [UR3]
11
10
3
NR (ADDRESS : NR1)
30a
MCT (S,G) : [UR3]
21a
UR (ADDRESS : UR1)
20a
20a
MCT (S,G) : [UR3]
21b
UR (ADDRESS : UR2)
20b
20b
MFT (S,G) : [G]
21c
UR (ADDRESS : UR3)
20c
2
DESTI-NATION TERMINAL (ADDRESS : R1)
40a
NR (ADDRESS : NR2)
30b
DESTI-NATION TERMINAL (ADDRESS : R2)
40b
NR (ADDRESS : NR3)
30c
DESTI-NATION TERMINAL (ADDRESS : R3)
40c

FIG. 32

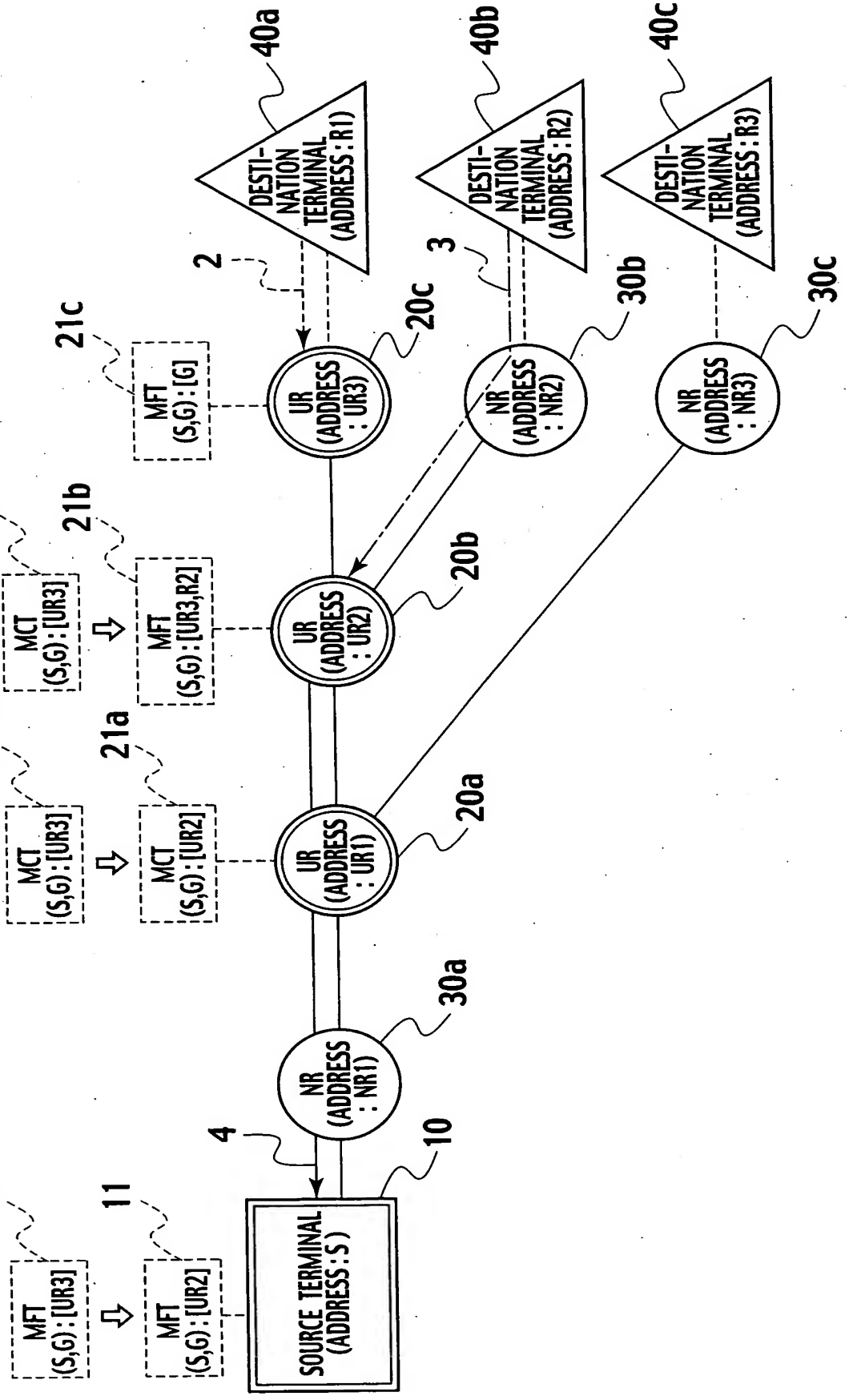

SOURCE TERMINAL (ADDRESS : S)
MFT (S,G) : [UR3]
MFT (S,G) : [UR2]
114
11
4
10
NR (ADDRESS : NR1)
30a
UR (ADDRESS : UR1)
20a
MCT (S,G) : [UR3]
MCT (S,G) : [UR2]
217a
21a
UR (ADDRESS : UR2)
20b
MCT (S,G) : [UR3]
MFT (S,G) : [UR3,R2]
216b
21b
UR (ADDRESS : UR3)
20c
MFT (S,G) : [G]
21c
2
3
NR (ADDRESS : NR2)
30b
NR (ADDRESS : NR3)
30c
DESTI-NATION TERMINAL (ADDRESS : R1)
40a
DESTI-NATION TERMINAL (ADDRESS : R2)
40b
DESTI-NATION TERMINAL (ADDRESS : R3)
40c

FIG. 33

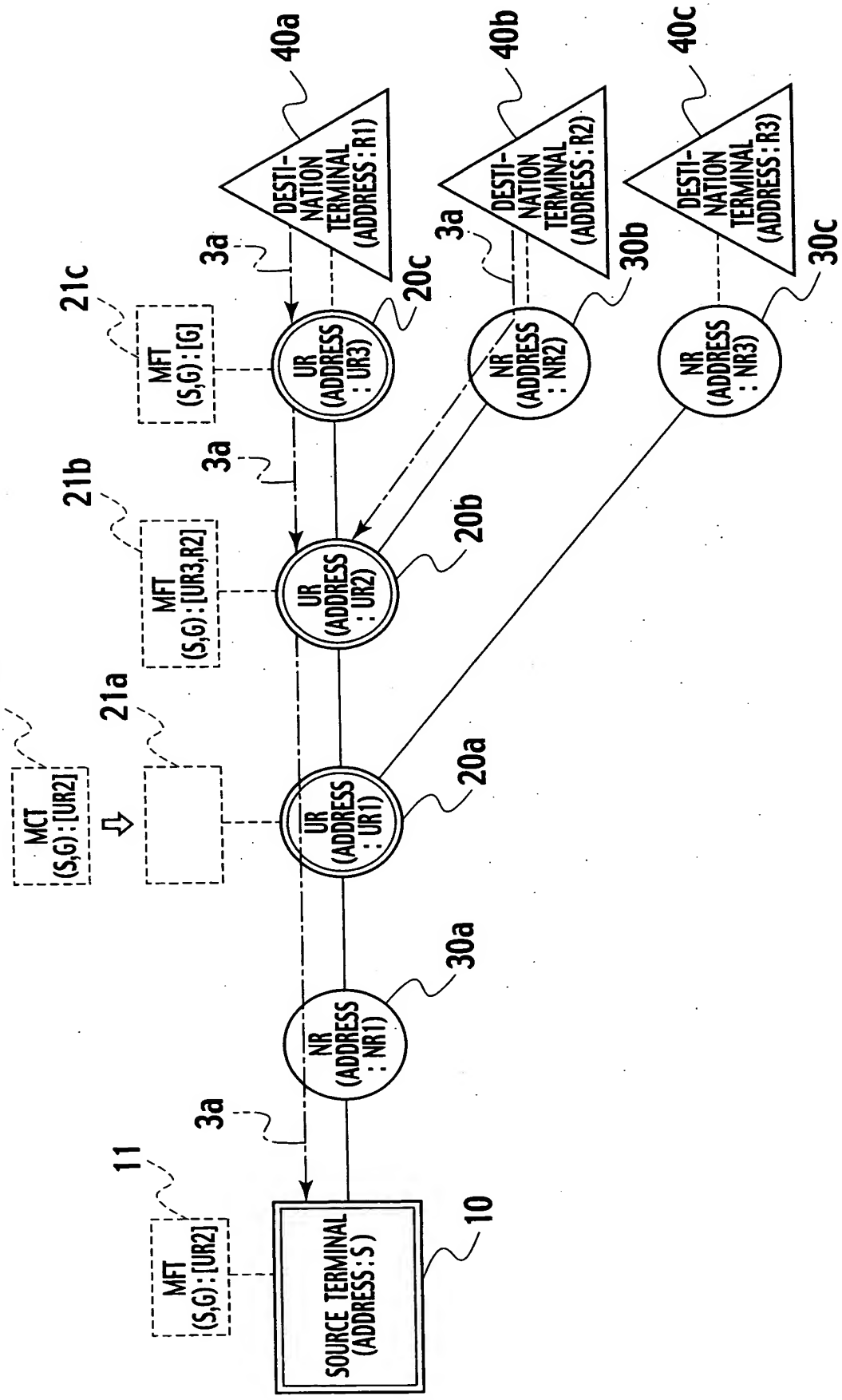

40a
DESTI-NATION TERMINAL (ADDRESS: R1)
40b
DESTI-NATION TERMINAL (ADDRESS: R2)
40c
DESTI-NATION TERMINAL (ADDRESS: R3)
3a
21c
MFT (S,G): [G]
UR (ADDRESS: UR3)
20c
NR (ADDRESS: NR2)
30b
NR (ADDRESS: NR3)
30c
21b
MFT (S,G): [UR3,R2]
UR (ADDRESS: UR2)
20b
218a
MCT (S,G): [UR2]
21a
UR (ADDRESS: UR1)
20a
NR (ADDRESS: NR1)
30a
11
MFT (S,G): [UR2]
SOURCE TERMINAL (ADDRESS: S)
10

FIG. 34

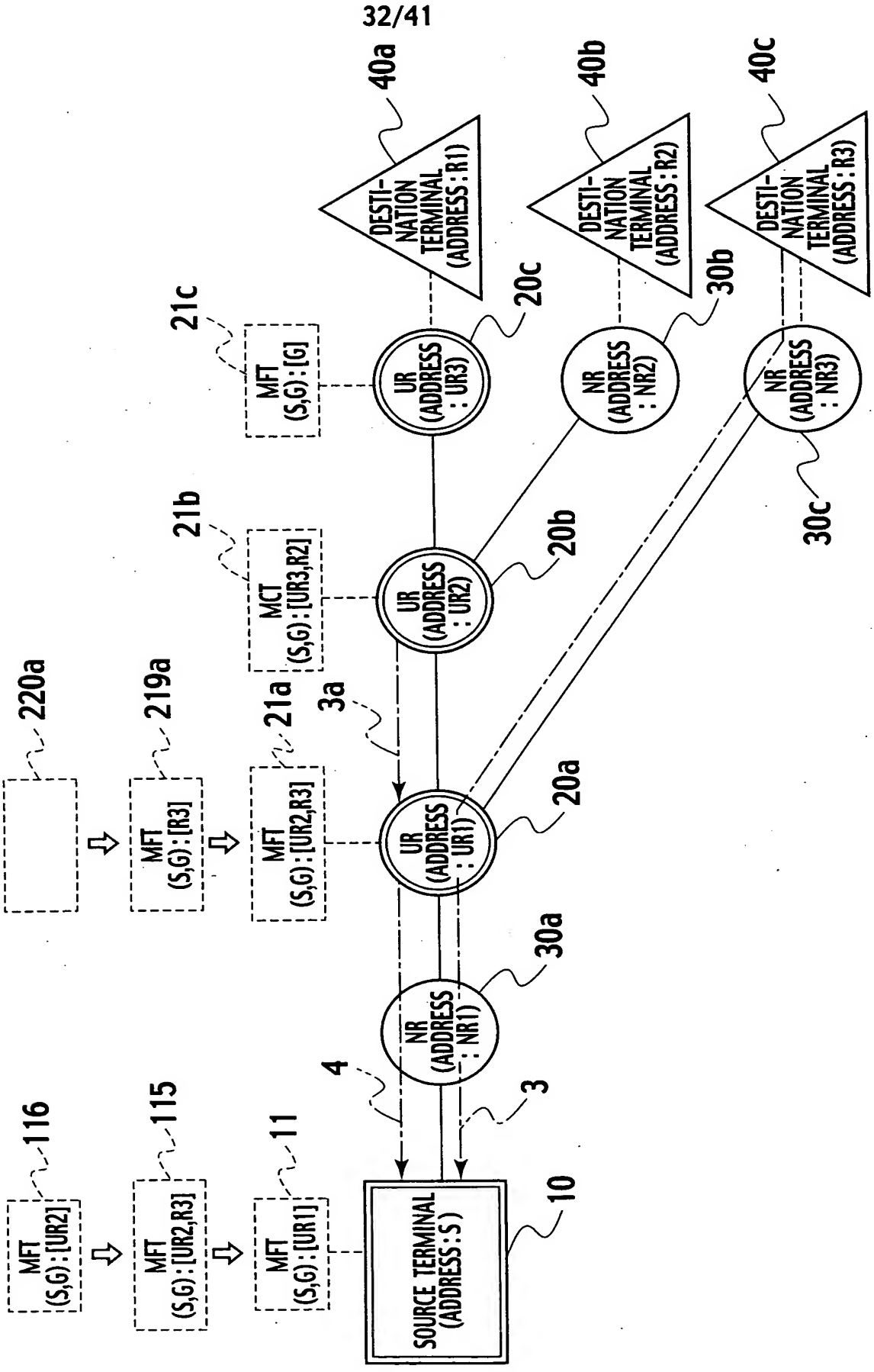

SOURCE TERMINAL (ADDRESS: S)
10
MFT (S,G): [UR1]
11
MFT (S,G): [UR2,R3]
115
MFT (S,G): [UR2]
116
NR (ADDRESS: NR1)
30a
UR (ADDRESS: UR1)
20a
MFT (S,G): [UR2,R3]
21a
MFT (S,G): [R3]
219a
220a
3
3a
4
UR (ADDRESS: UR2)
20b
MCT (S,G): [UR3,R2]
21b
NR (ADDRESS: NR2)
30b
NR (ADDRESS: NR3)
30c
UR (ADDRESS: UR3)
20c
MFT (S,G): [G]
21c
DESTI-NATION TERMINAL (ADDRESS: R1)
40a
DESTI-NATION TERMINAL (ADDRESS: R2)
40b
DESTI-NATION TERMINAL (ADDRESS: R3)
40c

FIG. 35

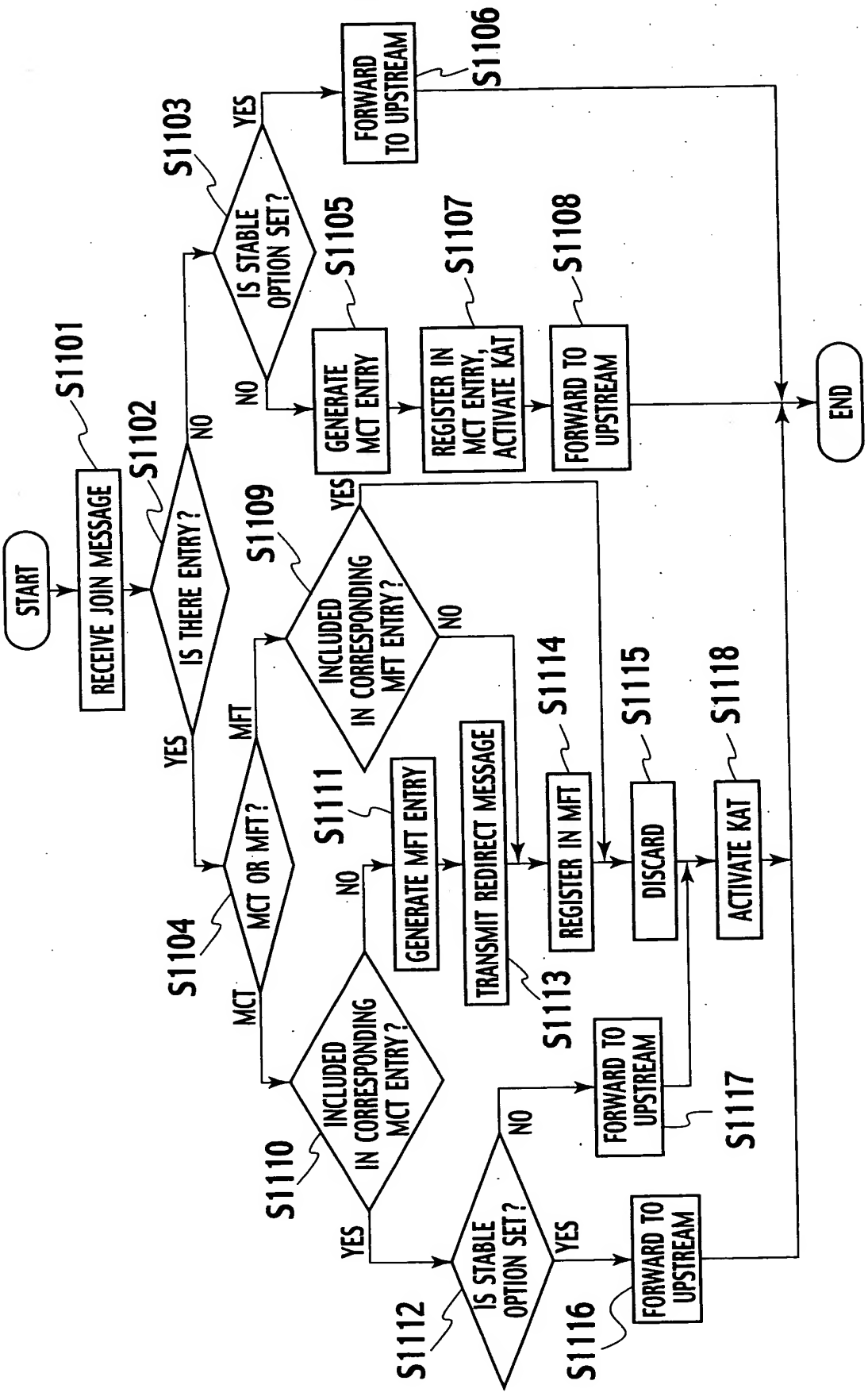

START
RECEIVE JOIN MESSAGE
S1101
IS THERE ENTRY?
S1102
NO
YES
MFT
MCT OR MFT?
S1104
MCT
INCLUDED IN CORRESPONDING MCT ENTRY?
S1110
YES
NO
IS STABLE OPTION SET?
S1112
YES
NO
FORWARD TO UPSTREAM
S1116
FORWARD TO UPSTREAM
S1117
GENERATE MFT ENTRY
S1111
TRANSMIT REDIRECT MESSAGE
S1113
INCLUDED IN CORRESPONDING MFT ENTRY?
S1109
YES
NO
REGISTER IN MFT
S1114
DISCARD
S1115
ACTIVATE KAT
S1118
IS STABLE OPTION SET?
S1103
YES
NO
FORWARD TO UPSTREAM
S1106
GENERATE MCT ENTRY
S1105
REGISTER IN MCT ENTRY, ACTIVATE KAT
S1107
FORWARD TO UPSTREAM
S1108
END

FIG. 36

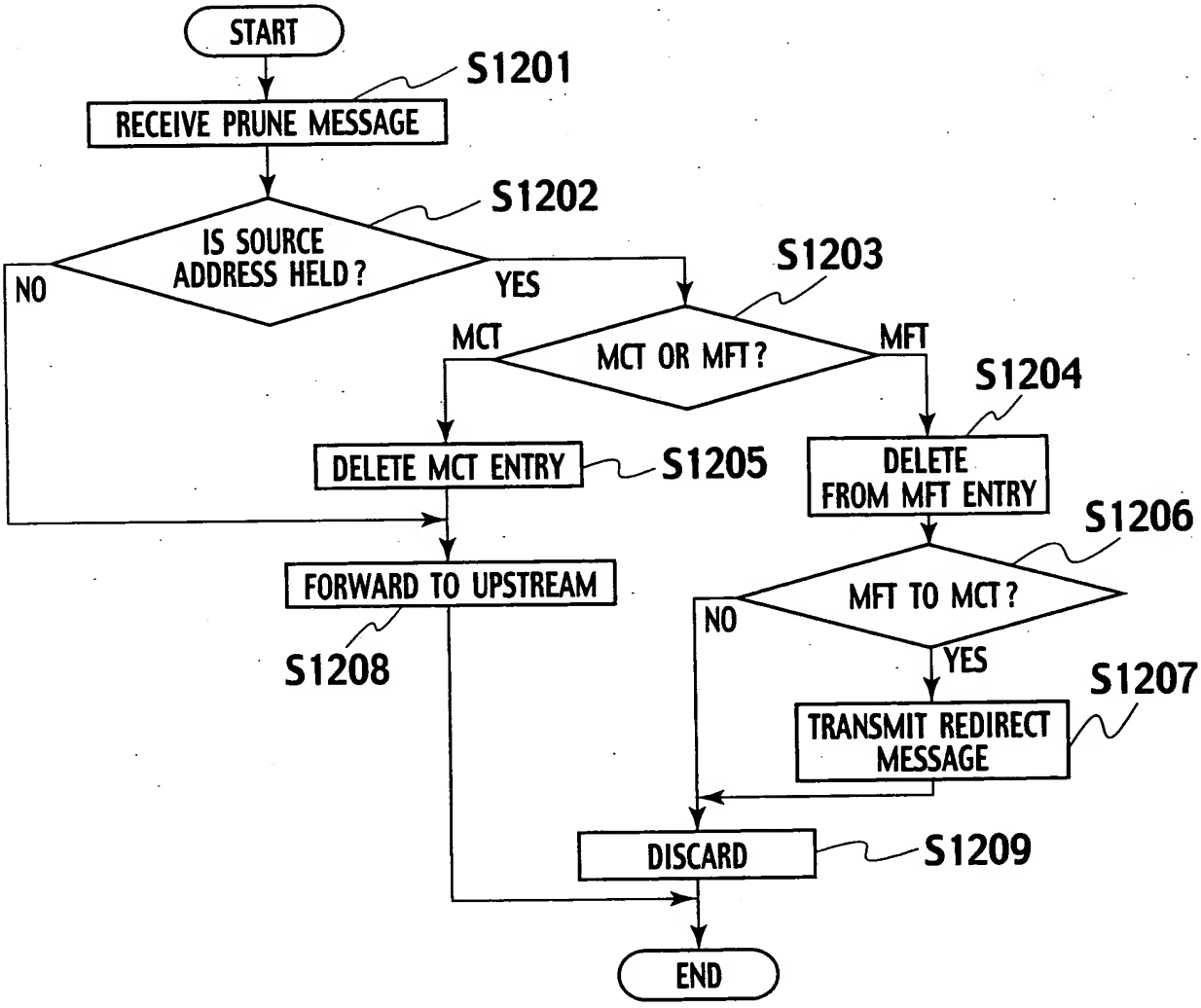

START
S1201
RECEIVE PRUNE MESSAGE
S1202
IS SOURCE ADDRESS HELD?
NO
YES
S1203
MCT OR MFT?
MCT
MFT
S1204
DELETE MCT ENTRY
S1205
DELETE FROM MFT ENTRY
S1206
FORWARD TO UPSTREAM
S1208
MFT TO MCT?
NO
YES
S1207
TRANSMIT REDIRECT MESSAGE
DISCARD
S1209
END

FIG. 37

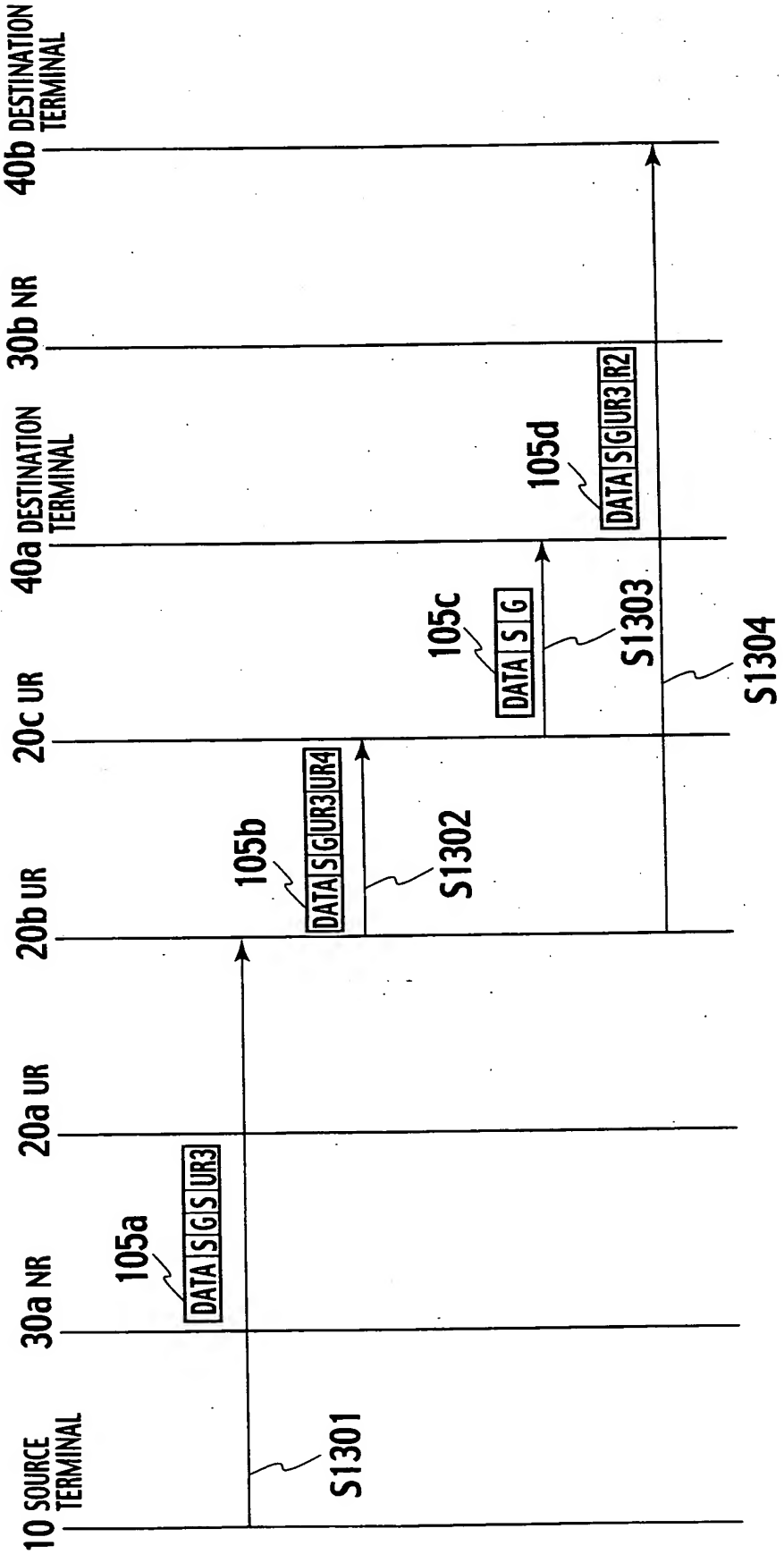

10 SOURCE TERMINAL
30a NR
20a UR
20b UR
20c UR
40a DESTINATION TERMINAL
30b NR
40b DESTINATION TERMINAL
105a
DATA S G S UR3
105b
DATA S G UR3 UR4
105c
DATA S G
105d
DATA S G UR3 R2
S1301
S1302
S1303
S1304

FIG. 38

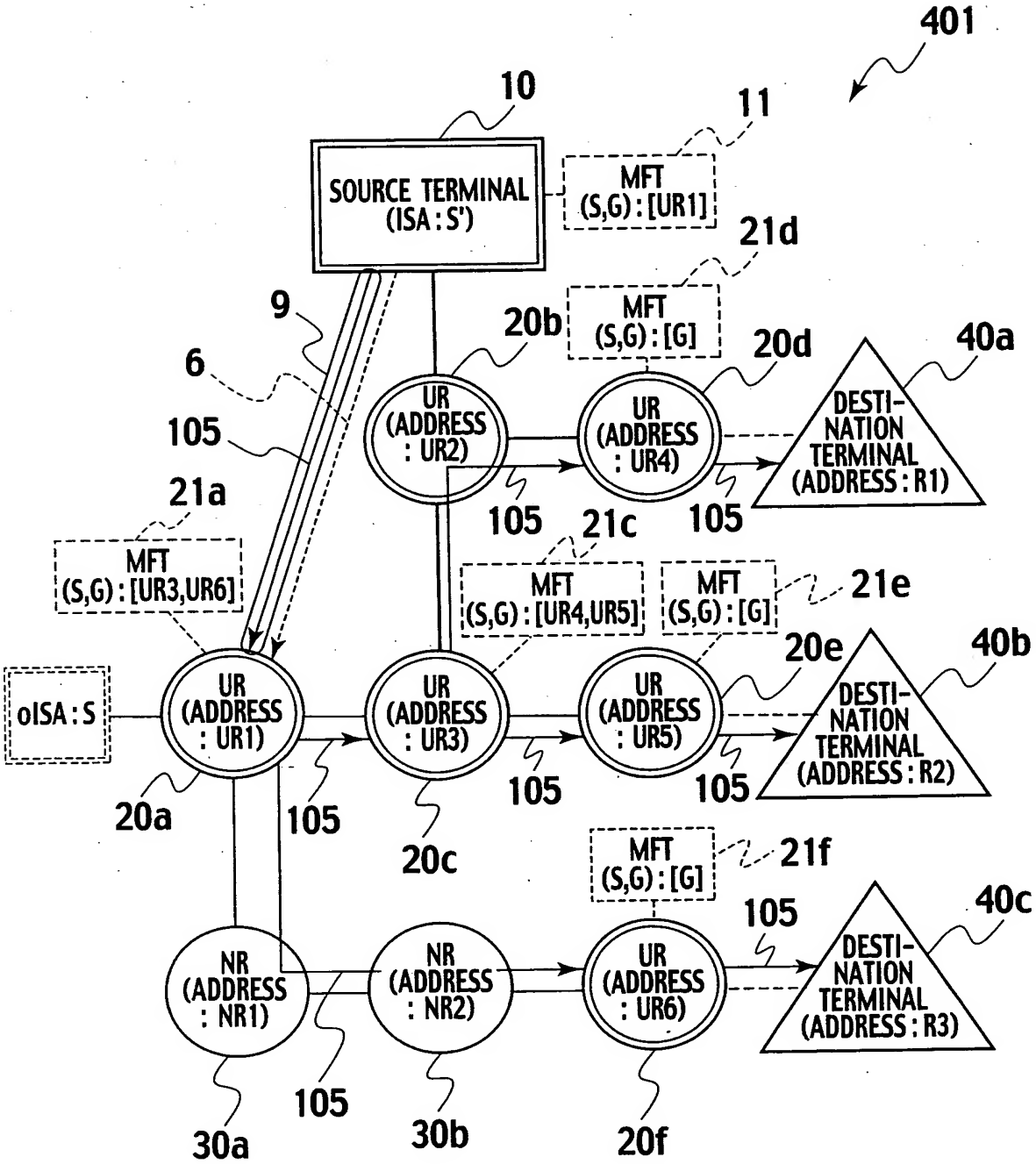

401
10
11
SOURCE TERMINAL (ISA : S')
MFT (S,G) : [UR1]
21d
MFT (S,G) : [G]
9
20b
20d
40a
6
105
UR (ADDRESS : UR2)
UR (ADDRESS : UR4)
DESTI-NATION TERMINAL (ADDRESS : R1)
21a
105
105
21c
MFT (S,G) : [UR3,UR6]
MFT (S,G) : [UR4,UR5]
MFT (S,G) : [G]
21e
20e
40b
oISA : S
UR (ADDRESS : UR1)
UR (ADDRESS : UR3)
UR (ADDRESS : UR5)
DESTI-NATION TERMINAL (ADDRESS : R2)
20a
105
105
105
20c
MFT (S,G) : [G]
21f
105
40c
NR (ADDRESS : NR1)
NR (ADDRESS : NR2)
UR (ADDRESS : UR6)
DESTI-NATION TERMINAL (ADDRESS : R3)
105
30a
30b
20f

FIG. 39

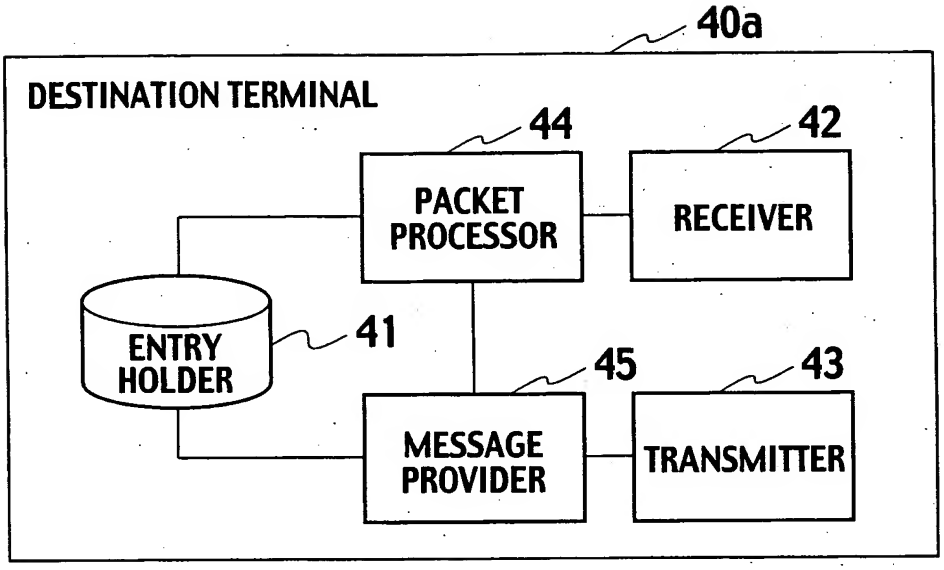


FIG. 40

41

ISA	MULTICAST GROUP ADDRESS	oISA	MPT	ST
S	G			
S'	G	S	MPT	ST

FIG. 41

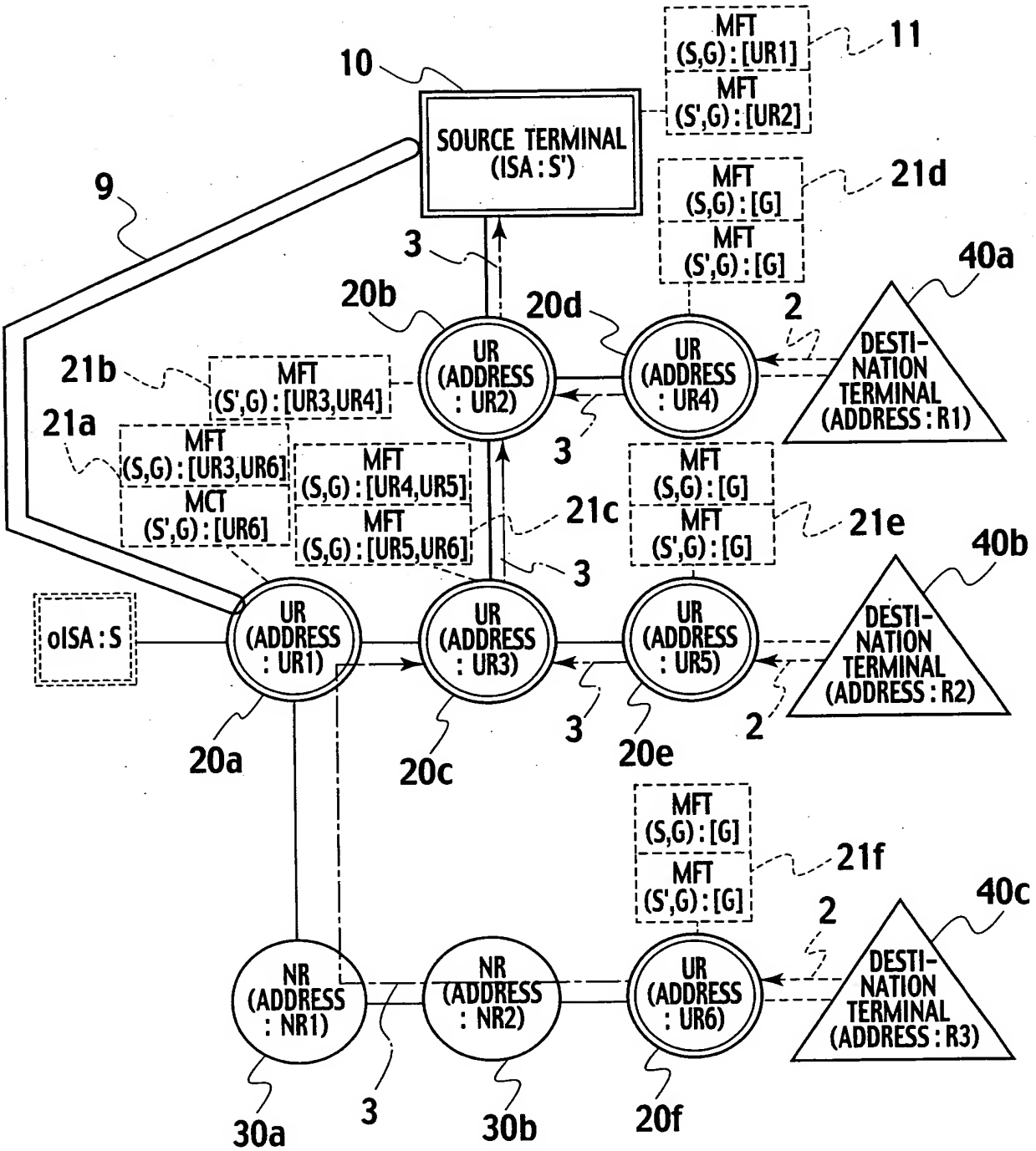

MFT (S,G) : [UR1]
MFT (S',G) : [UR2]
11
10
SOURCE TERMINAL (ISA : S')
9
MFT (S,G) : [G]
MFT (S',G) : [G]
21d
3
40a
20b
20d
2
21b
MFT (S',G) : [UR3,UR4]
UR (ADDRESS : UR2)
UR (ADDRESS : UR4)
DESTI-NATION TERMINAL (ADDRESS : R1)
21a
MFT (S,G) : [UR3,UR6]
MCT (S',G) : [UR6]
MFT (S,G) : [UR4,UR5]
MFT (S,G) : [UR5,UR6]
3
21c
MFT (S,G) : [G]
MFT (S',G) : [G]
21e
40b
3
oISA : S
UR (ADDRESS : UR1)
UR (ADDRESS : UR3)
UR (ADDRESS : UR5)
DESTI-NATION TERMINAL (ADDRESS : R2)
20a
20c
3
20e
2
MFT (S,G) : [G]
MFT (S',G) : [G]
21f
40c
2
NR (ADDRESS : NR1)
NR (ADDRESS : NR2)
UR (ADDRESS : UR6)
DESTI-NATION TERMINAL (ADDRESS : R3)
30a
3
30b
20f

FIG. 42

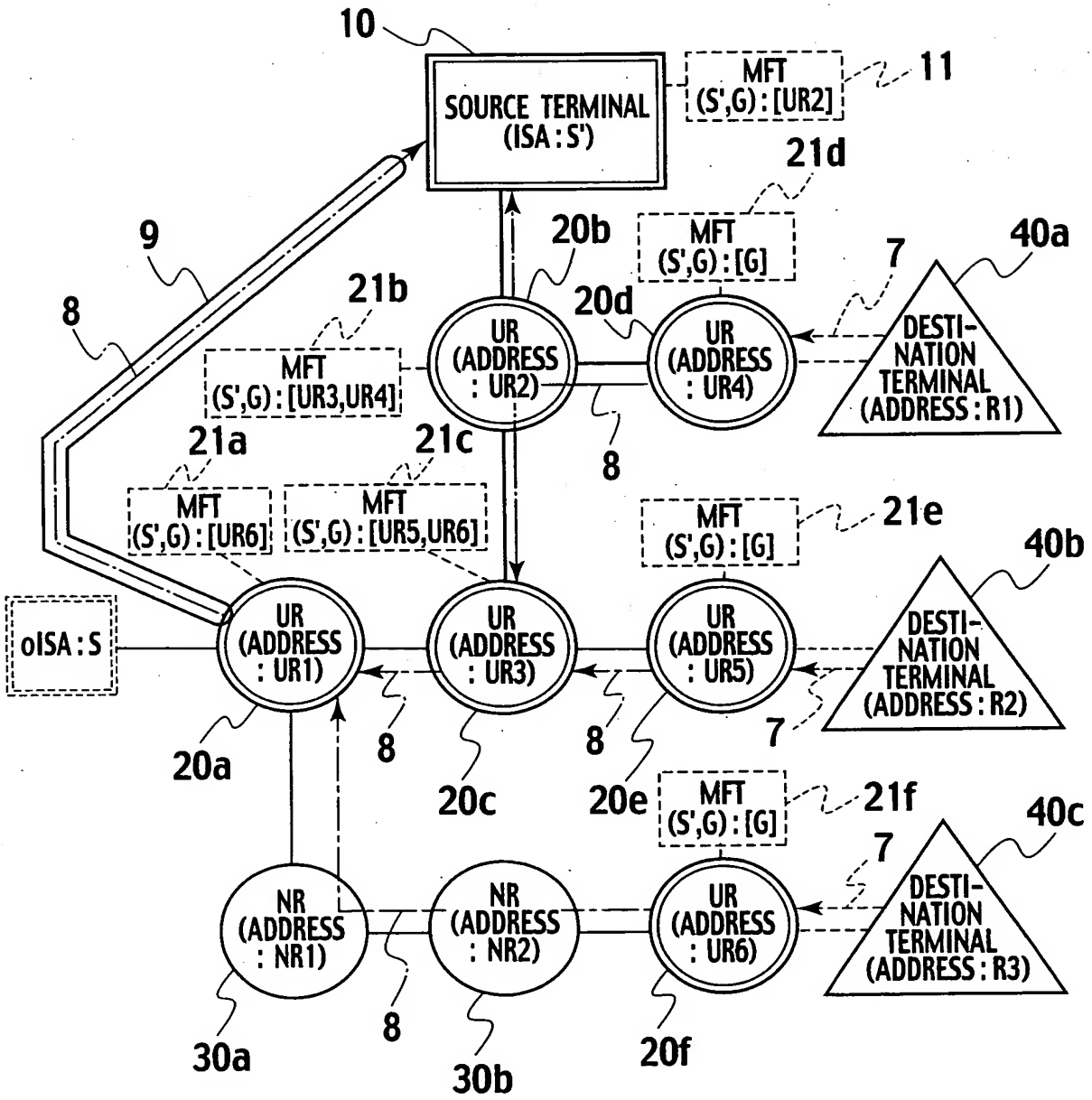

10
SOURCE TERMINAL (ISA : S')
MFT (S',G) : [UR2]
11
21d
MFT (S',G) : [G]
9
20b
40a
7
8
21b
20d
MFT (S',G) : [UR3,UR4]
UR (ADDRESS : UR2)
UR (ADDRESS : UR4)
DESTI-NATION TERMINAL (ADDRESS : R1)
8
21a
21c
MFT (S',G) : [UR6]
MFT (S',G) : [UR5,UR6]
MFT (S',G) : [G]
21e
40b
oISA : S
UR (ADDRESS : UR1)
UR (ADDRESS : UR3)
UR (ADDRESS : UR5)
DESTI-NATION TERMINAL (ADDRESS : R2)
20a
8
20c
8
20e
7
MFT (S',G) : [G]
21f
40c
7
NR (ADDRESS : NR1)
NR (ADDRESS : NR2)
UR (ADDRESS : UR6)
DESTI-NATION TERMINAL (ADDRESS : R3)
30a
8
30b
20f

FIG. 43

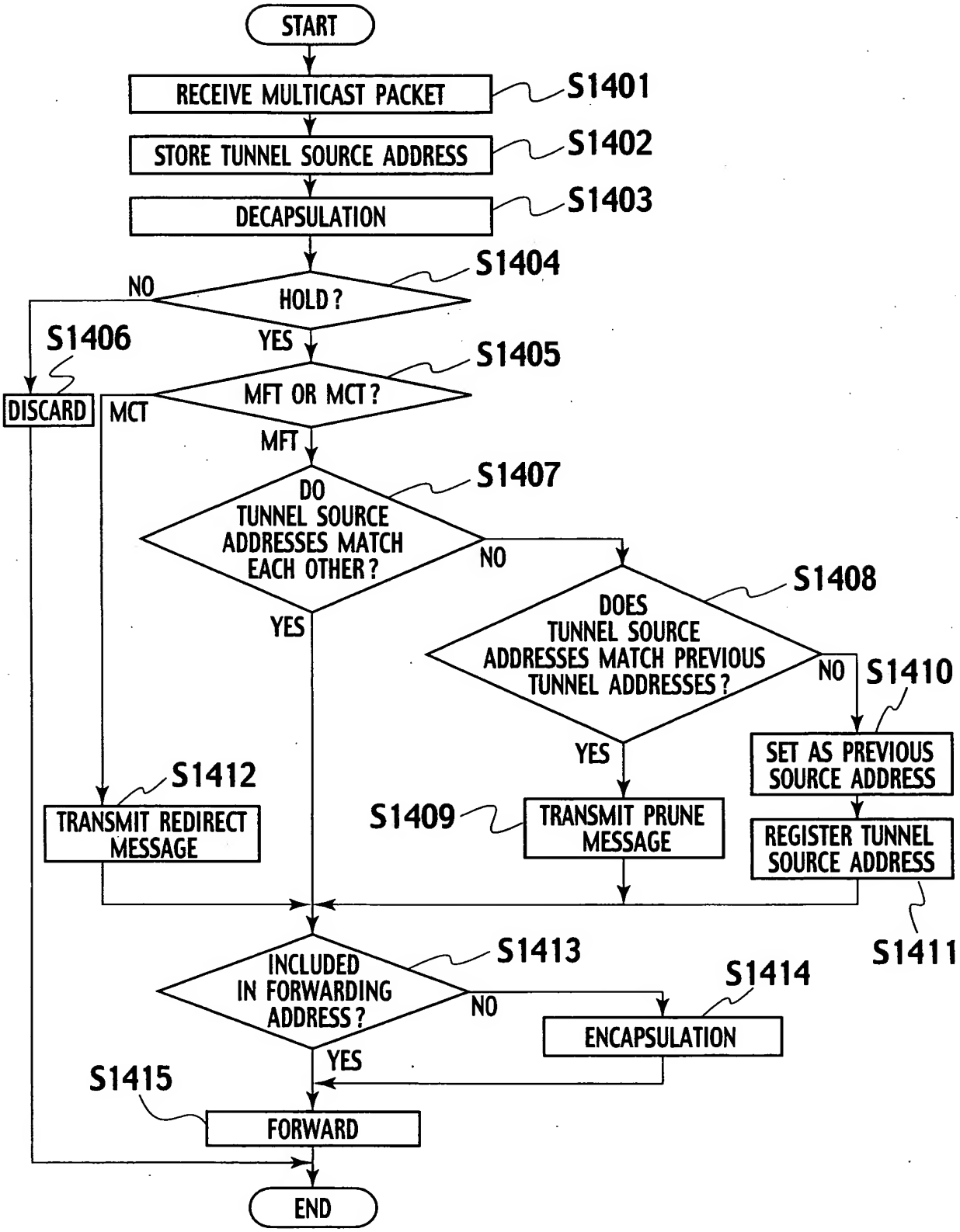
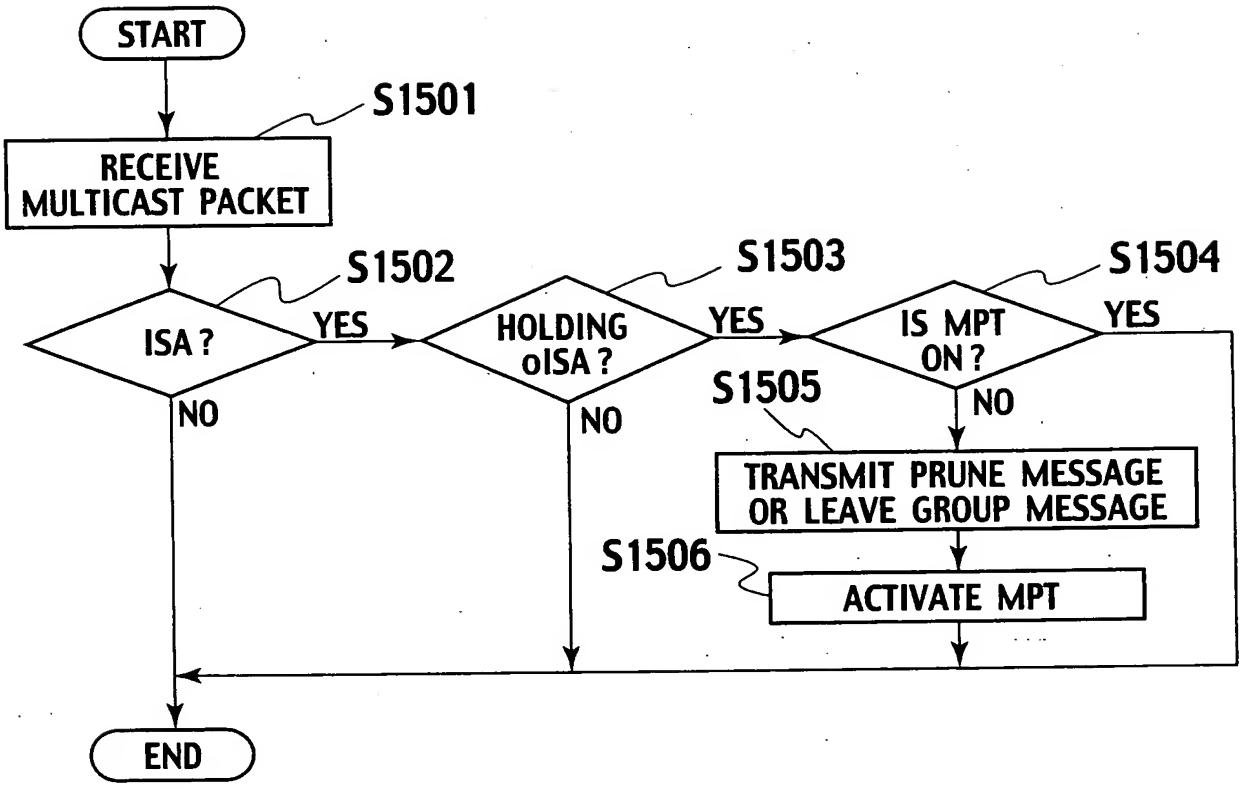

START
RECEIVE MULTICAST PACKET
S1401
STORE TUNNEL SOURCE ADDRESS
S1402
DECAPSULATION
S1403
HOLD?
S1404
NO
YES
S1406
DISCARD
MFT OR MCT?
S1405
MCT
MFT
DO TUNNEL SOURCE ADDRESSES MATCH EACH OTHER?
S1407
NO
YES
DOES TUNNEL SOURCE ADDRESSES MATCH PREVIOUS TUNNEL ADDRESSES?
S1408
NO
S1410
YES
SET AS PREVIOUS SOURCE ADDRESS
S1412
TRANSMIT REDIRECT MESSAGE
S1409
TRANSMIT PRUNE MESSAGE
REGISTER TUNNEL SOURCE ADDRESS
S1411
INCLUDED IN FORWARDING ADDRESS?
S1413
S1414
NO
ENCAPSULATION
YES
S1415
FORWARD
END

FIG. 44


START
S1501
RECEIVE MULTICAST PACKET
S1502
ISA?
YES
NO
S1503
HOLDING oISA?
YES
NO
S1504
IS MPT ON?
YES
NO
S1505
TRANSMIT PRUNE MESSAGE OR LEAVE GROUP MESSAGE
S1506
ACTIVATE MPT
END